Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VIII.] NEW-YORK, DECEMBER 11, 1852. [NUMBER 13.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Sun Buildings),
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
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USEFUL RECEIPTS.

Cures for the Bite of Snakes.

In some parts of our country, persons who are bitten with snakes are cured with whiskey, by making them intoxicated. We have read of and been informed of a number of cures by this method of alcoholic application. We have also been informed that tobacco in a moist state applied to the bite is also an effectual cure. Recent English papers give an account of a young man who was bitten a short time ago in the Zoological Gardens of London, by a cobra snake, and from the effects of which he died in a short time. A correspondent has written to the "London Expositor" on the subject, and cites a great number of cases in which a volatile caustic alkali named *Eau de Luce* was applied inside and out with complete success. The receipt for making this is not given in the "Expositor," but we have found it in another place, and as the cases cited were persons bitten by the hooded snake, the most venomous in the world, and as the said liquid is now used in the East Indies with perfect success, the receipt for making it is somewhat valuable.

"Take 4 ounces of the rectified spirit of wine, and dissolve it in 10 or 12 grains of white soap; filter this solution and dissolve it in a drachm of rectified oil of amber and filter again. Mix as much of this solution with a strong solution of the carbonate of ammonia in a glass bottle, which, when sufficiently shook, will produce a beautiful milky liquid. If any cream is formed on the surface, more of the spirit of wine must be added."

This is applied to the bite, and about 40 drops given as a drink at the same time, this is done as soon as possible and repeated in about ten minutes, when no more will be required for a half hour, and after that the cure is expected to be complete.

New Tinning Process.

The above is the title of a new process for tinning iron articles lately patented in France, and invented by M. Mare, of Nantes. The articles to be tinned are first scoured with diluted sulphuric acid, and when quite clean are placed in warm water, after this they are dipped in a solution of muriatic acid, copper, and zinc, and, lastly, plunged into a tin bath to which a small quantity of zinc has been added. When the tinning is finished, the articles are taken out and plunged into boiling water The operation is completed by placing them in a very warm sand bath. This last process softens the iron.

Fire Kindler.

Take a quart of tar, three pounds of rosin, melt them, bring to a cooling temperature, mix with as much saw dust, with a little charcoal added, as can be worked in; spread out while hot, upon a board; when cold, break it into lumps of the size of a large hickory nut. The composition will easily ignite from a match, and burn with a strong blaze, long enough to start any wood that is fit to burn.

THE HYDRAULIC RAM.

Figure 1.

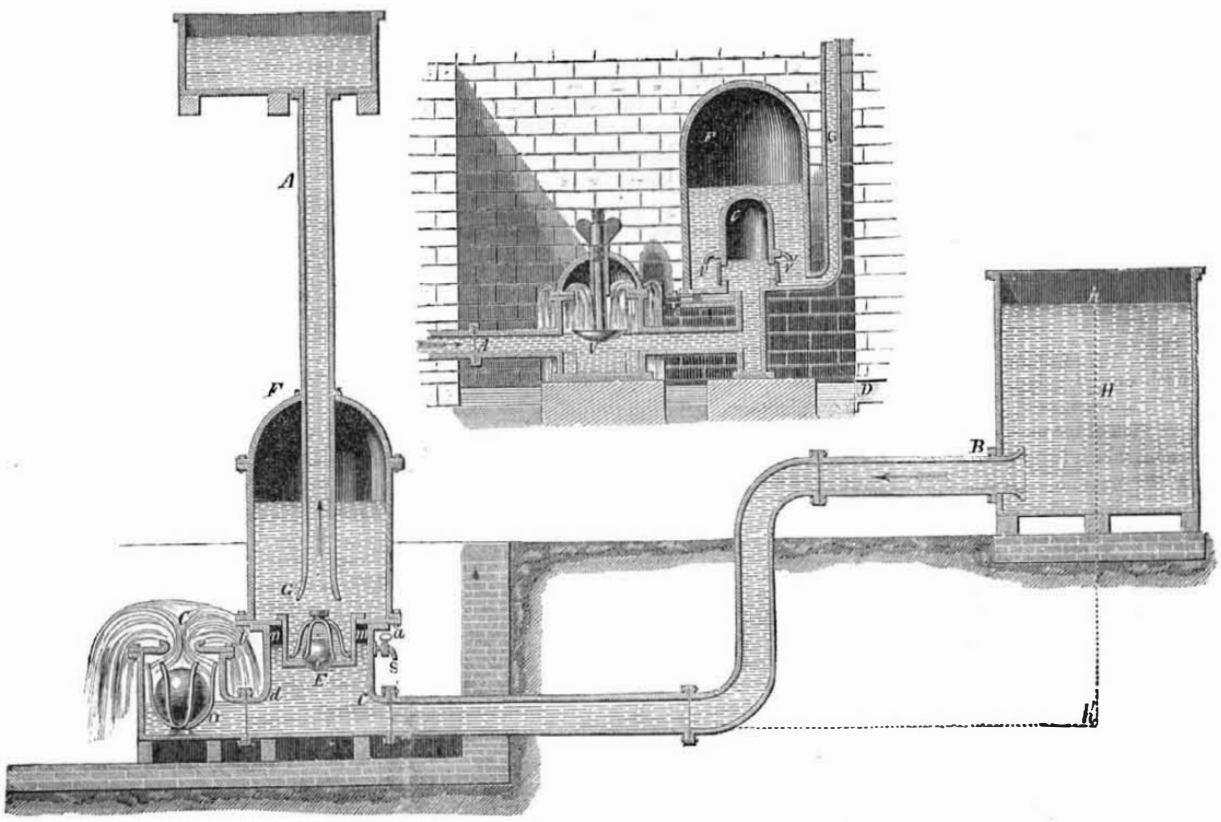

Figure 2.

The above figures illustrate no new invention, but as many of our readers have solicited more information respecting hydraulic rams than has yet been given through our columns, we present this beautiful engraving to the exclusion of illustrating some new invention on our first page, according to our usual custom. At any other period when we deem the same course profitable to our readers, we will pursue it in reference to any other machine or apparatus; nothing common, however, or unimportant, need ever be expected. To the ingenious Montgolfiers of France, the invention of the hydraulic ram is justly, we believe, attributed, and the two sectional figures represent the ram as invented and improved by father and son.

In figure 1, H is a head of water discharging itself into a pipe, B, along which it flows with a velocity depending on the height of the fall, and it escapes to waste unless prevented at the orifice, C, which admits of being opened or shut by a valve. F is a vessel of air, which is connected with the conduit tube, B D, by a small cylinder, *a b c d*. In the bottom of F is a circular orifice, to which a small cylindrical support is adapted, of which the extremity, E, is furnished with a valve. F is supplied with air by a valve, *s*, and there is also a space, *m n*, full of air. G A is an ascent tube, rising into a cistern at the top of the house, or to any considerable elevation where a supply of water is required. The pipe, B D, through which the water runs, is called the body of the ram; the pipe, G A, the tube of ascension; C is the stoppage valve; and E is the ascension valve. These valves are hollow globes weighing about double the weight of water which they displace, and over each is a metal bridle to prevent it from rising too high.—The extremity of the body C, and the cylinder, E, form what is called the head of the am..

The action of the ram is as follows:—The water escaping through C, with a velocity due to the height of the fall, forces the ball at D, out of its muzzle, and raises it to the orifice, C, which it immediately stops. The water thus suddenly arrested in its passage, would, by its momentum, burst the tube, were it not for the other valve, which is lifted up, and allows the water to escape into the chamber, F, whereby the air is compressed, and by its spring, forces water up the tube, A, just as water is forced out of the jet by the elasticity of the air in the air-chamber of a fire-engine.—The ball, *e*, soon loses the velocity imparted to it by the stopping of the orifice, C, and descends by its own weight, as does also the ball at D, into their first positions; the water then runs off again at C, until its velocity is sufficient to raise the ball, D, when the orifice is again closed, and E again opened by the re-action, and thus the effects are constantly repeated, in times which are sensibly equal, in the same ram, and with the same current.

In the action of this machine, four distinct periods may be traced:—1, the water escapes through the orifice, C, with a velocity due to the fall, and that orifice is closed; 2, the air in the space, *m n*, is compressed; 3, the ascension-valve is opened, the air in the reservoir compressed, the water rises in the ascension-tube, G, the ascension-valve, *e* is shut, as is also the valve D; 4, the air compressed in the second interval re-acts, the valve, D, descends from the orifice, and the water, again acquiring its velocity, again produces the like effects.

It will be seen from these details, that a very insignificant pressing column, *h h'* is capable of raising a very high ascending column, G A, so that a sufficient fall of water may be obtained in any running brook by damming up its upper end to produce the reservoir, H, and carrying the pipes, B D, down the channel of the stream until a sufficient fall is obtained.—A considerable length of descending pipe is desirable to ensure the action of the machine, otherwise the water, instead of entering the air-vessel, may be thrown back into the reservoir. Air is admitted from time to time into the annular space, *m n*, whence it finds its way into F.

To estimate the value of this or, indeed, of any hydraulic engine, its produce must be ascertained, the expense of its erection, and that of keeping it in repair. In every hydraulic engine, the force expended is the product of the water as it comes from its source, multiplied by the height through which it falls before it acts on the machine; the produce being the quantity of water raised in the same time, multiplied by the height to which it is elevated.

In a ram placed by Montgolfier in his garden, the fall, which was procured artificially, was 7½ feet. The height to which the water was raised, 50 feet; the diameter of the tube 2 inches; the water expended in 4 minutes, was 315 litres, that elevated 30 litres; hence the expense of force employed is 7½×315=2,362; the useful force 50×30=1,500, which give the ratio of 100 to 64 as the expense to the produce. It appears, however, from the mean of a number ot experiments, that the expense will be to the produce as 100: 57, so that a hydraulic ram executed with care; and placed in not unfavorable circumstances, employs usefully, at least, half its force.

The younger Montgolfier so far improved upon this machine, as to make the work performed amount to about 60 per cent. The alterations introduced by him, are shown in figure 2, in which A is the feed-pipe or body of the ram; V the stoppage-valve suspended by a stem to a sort of stirrup; F is the air reservoir, enclosing a smaller reservoir, C, called the air-mattrass; *v v'* are the flap ascension-valves, and G the tube ot ascension. The action is as follows:—The water in A, flowing in the direction of the arrow, soon acquires sufficient velocity to close the valve, V, and to open the valves, *v v'*, whereby a certain quantity of water enters F, and passes up G. This impulse or momentum being expended, the valve, V, descends, the water overflows on every side, and falling down outside, is carried off below by a pipe, D, a part of which only is shown, after which the same phenomena are repeated. Now it will be seen, that as soon as the water rises above the valves, *v v'*, air is imprisoned in the mattrass, C, and when the force of the water after shutting V, comes to expend itself upon the air vessel, F, the violence of the shock, which is considerable in the arrangement shown in the first figure, is in this case greatly lessened by the interposition of C, which acts as a sort of air-cushion;

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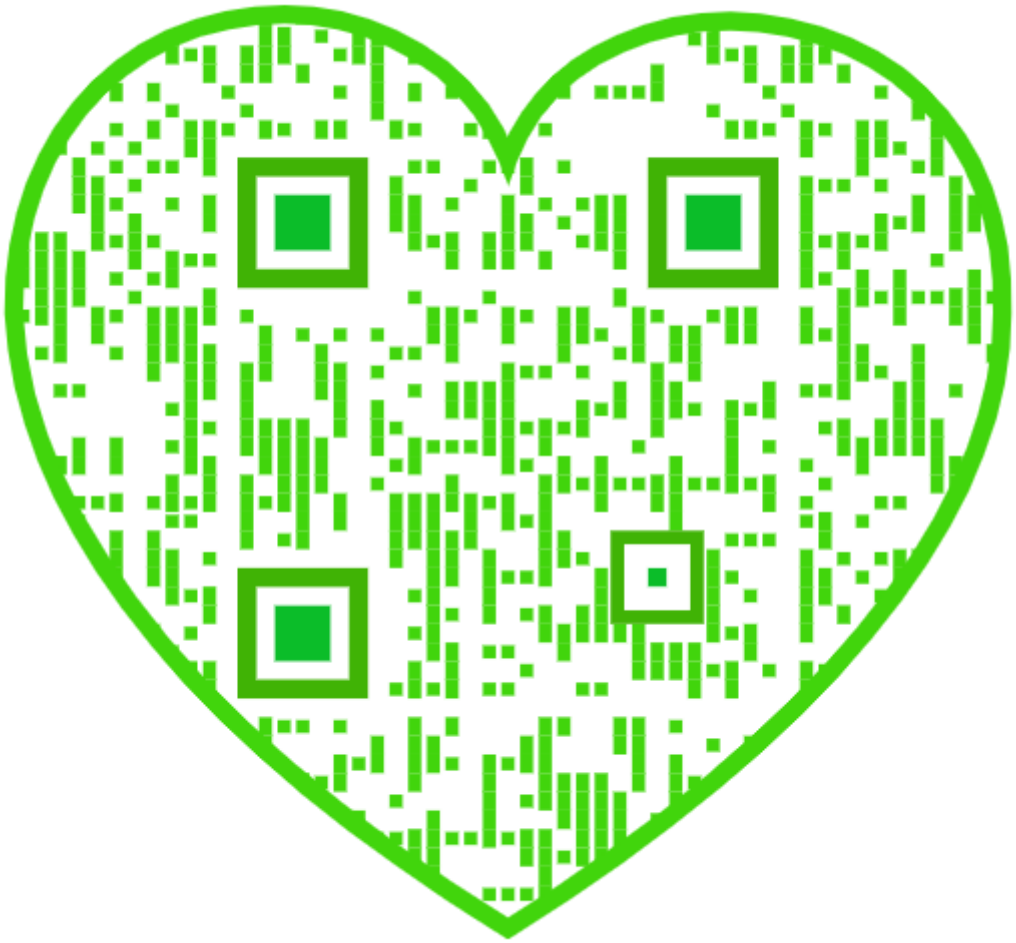

it also causes the valves to shut with less noise, and prevents the pipe from undergoing such violent strains. In short, while a much larger amount of work is done, all the operations take place with so much ease, that the machine is less shaken and put out of repair than in the former apparatus. When the force which opens the valves, *v v'*, and compresses the air in C is expended, this air expands, and in doing so, assists the retrograde motion of the water in the pipe. The air in C, in expanding, has for a moment a less pressure than the external air, a circumstance which is turned to useful account in keeping both C and F supplied with air, as will be noticed presently. The valves, *v v'*, remain open so long as the opening pressure exceeds that which is exerted upon them by the fluids in F. The air-vessel, F, also derives advantage from the matrass, C, for as soon as the valves, *v v'* are opened, and water enters, compressing the air in F, the water is not immediately forced up the tube, G, but can accumulate somewhat in F, and thus act with great effect, for it is evident that the pressure required to open the ascension-valves, would be much greater if the whole column of water, G, passed suddenly from a state of rest into one of motion at the moment the valves were opened, and they would in such case also remain open a much shorter time.

One of the great defects of the fire-engine, is the absorption of the air in the air-chamber by the water, which takes place all the more rapidly as the pressure is great. Now the air in F becomes dissolved rapidly in proportion to the increasing elevation of water in the ascension tube; wherefore in order to keep up a constant supply, a small snifting valve is added at S, consisting merely of a tube with a fine capillary bore left entirely open. At the moment when the water of the ram is relieved from pressure, the density of the air in C becomes slightly less than that of the outer air, as already noticed; consequently a small portion of air rushes in through the valve with a noise like the sniffling of a person's nose, whence this kind of valve is called a snifting, valve. A portion of the air thus admitted finds its way through the valve, *v v'*, into F to supply the place of that which is dissolved and carried off by the ascending-column. At every blow of the ram, *i. e.* every time the valve, B, is closed, and the water is under compression, a small jet of water is darted out of the snifting-valve; this valve therefore acts as a sort of pulse to the machine, drawing in air and jetting out water, by regular periodical movements. Indeed the pulsatory motion of the ram becomes painfully evident where the column to be raised is considerable. In such case, the ground over the pipe is shaken at every blow, and a tremor is felt in every room in the house against the wall of which the supply pipe ascends. By covering this pipe with felt, the evil may be to a certain extent mitigated, but not entirely overcome.

Lumber.

The quantity of lumber surveyed at Bangor averages annually about 200,000,000 feet, whose value cannot fall far short of $3,000,000 The quantity got to market this year is less than last year, owing to the great drought in the early part of the season. The demand has been great, and the prices of all qualities have run a dollar higher per thousand feet than last year, so that although the quantity will fall short by some 15,000,000 of feet, the sales will amount to nearly a quarter of a million dollars more than last year.

The Salt of Florida.

In 1829, the easterly half of the Island of Key West, consisting of a series of salt water ponds, was leased by the proprietors to the Lafayette Salt Company, who put up works on it, principally consisting of covered pans, after the plan adopted at Cape Cod and at New Bedford, from which the company must have taken from 15,000 to 20,000 bushels of salt annually, until 1846, when the hurricane almost entirely destroyed the improvement. The wreck of the materials was sold to Charles Howe, Esq., who bought the landed property and rebuilt the pans and vats. He also constructed ground pans after the manner of those in the Bahamas, from all of which he took in 1847 and 1848 an average of over 38,000 bushels. The years 1849 and 1850 were not quite so successful, from the wetness of the season; yet there was still made in those seasons an average of 20,000 bushels.

The works were considerably increased in extent last year; but from the unusual fall of rain, no more than 20,000 bushels were raked. This year 500 acres were exposed to evaporization. and it is believed that near 60,000 bushels have been made.

Great Improvement In the Treatment of Flax.

A great improvement in the early preparation of flax has been discovered in Ireland by a Mr. Watt. By it the flax is prepared for scratching without fermentation in 24 hours. The coarse flax is steamed along with some lime water, or high pressure steam itself will answer, for five hours in a close tight vessel, it is then taken out, run between heavy fluted rollers, and dried when it is fit for scratching. By this process the woody matter is rendered easy of separation from the fibrous; in scratching, very little tow is made. It is a plan highly spoken of by the Royal Flax Society.

An Old Book.

The Camden Literary and Library Association have in their possession a large book, originally published in Latin, at Rome, in the year 1639. It is a curious specimen of composition and typography.—[Exchange.

[We have an older book than that.—It is a large Bible in the Dutch language published at Hague, July 29th, 1637. It embraces the old and new Testaments, of the translation adopted by the National Synod of Dordrecht of the Netherland Reformed Kerch. The characters are the German text, and are as beautiful as any type of the present day. It is strongly bound and well secured with huge brass clasps. Every book has its first chapter adorned with an introductory ornamental capital letter, which, for beauty of design and grace of execution, has no superior now. So beautiful indeed are these letters that before the book came into our possession some sacriligeous wretch cut a great number of them out for transferring, no doubt, to adorn some modern picture Bible.

Teeth.

Healthy teeth depend mainly on healthy digestion, and on cleanly habits as regards the teeth. They must, of course, be confined to the purposes for which they are designed. If they are employed for the purpose of cracking nuts, biting thread, unscrewing needlecases, or turning the stopper of a smelling-bottle; if the mouth is used as a kind of portable for a tool-chest, in which a pair of scissors, a knife, a vice, a corkscrew, or any other instrument, may be found at the time of need—then serious and irretrievable injury will eventually be done to the enamel of the teeth, which no healthiness of digestion nor cleanliness of habit will avail to remedy.

Magnetic Iron Ore.

The editor of the Ste. Genevieve, (Mo.) Plaindealer has received a beautiful piece of iron ore from the Pilot Knob, which possesses magnetic properties to a very high degree.—It is thought that the mountain abounds in this species of ore,

Gold by the Ton Without Owners.

There is now at Melbourne a large quantity of gold, which was sent from the diggings by escort, and which has never been claimed. The amount is stated at eight tons, and these eight tons of gold are watched and warded by a corporal and five men.

The Canadian Executive has given notice that a tract of twenty-four millions of acres, lying mainly northeast of Lake Huron, in the latitude of the American mining districts of Lake Superior, will, as soon as surveyed, be thrown open to the landless in gratuitous tracts of one hundred and sixty acres. Alternate sections will thus be given away without price, those lying between them being reserved for sale to cover the expenses of surveying and opening the country to immigrants.

On the Erie Lake Shore Railroad, at Elk Creek, Pa., a magnificent bridge spans the stream, one hundred and fifteen feet above the water, and about a third of a mile in length. It is built on the plan of How's Truss Bridge, has about two million feet of lumber in it, and is a most stupendous wooden structure.

Patent Office Building.

In addition to a wing on the eastern side of the old building, and which is now completed, it is proposed to erect a similar edifice on the other side. The plan of the west wing contemplates the construction of each story in one continuous room of sixty-three feet in width, and two hundred and seventy feet in length; the floors to be supported by arches springing from granite piers in the sub-basement, and from marble piers in the principal and attic stories; in consequence of the great descent of the western half of the Patent Office square, the west wing will have a subbasement of seventeen feet in height, entirely out of the ground, making one more story in this than in the eastern wing. The architect shows the importance of bringing the centre building, as nearly as possible, into harmony with the wings, and suggests the propriety of altering the basement windows to bring them into conformity with those of the new building. This is conceived not only necessary to the beauty of the design, but also to the comfort and convenience of the clerks who occupy the rooms they light.—Another incongruity in the external appearance is the rock work of the basement of the centre building, standing, as it does, in juxtaposition with the smooth marble basement of the wing. Mr. Walter recommends, as a method of obviating, as far as possible, this objection, that the rough surface of the granite work be dressed off, and brought as nearly into conformity to the marble as may be done without cutting it into rustics. He expresses the opinion that it would be hazardous to attempt to rusticate this part of the work to correspond with the wing. as it is very doubtful whether the joints would hold good to the depth of the rustics. If, however, the wall is brought to a smooth surface, and painted like the rest of the building, the want of entire uniformity would not be observed.

Circular Saw.

The above is an invention lately patented in France, by M. Smyers, machinist at Chattemoue, for sawing and polishing slabs of slate It consists of two circular saws mounted on separate shafts, which dress at the same time with the greatest exactness, the two opposite and parallel sides, and afterwards the two other sides in a perpendicular direction to the former. The slab placed in a truck is approached of its own accord by the movement of the machine as the saws turn round. It follows that the operation is performed very rapidly, and with very little manual labor. This machine is applicable for slabs of marble and stone.

An Important Discovery.

A certain correspondent of the Courier and Enquirer has made an important discovery in voltaic electricity, which may be practically applied to the cure of weak nerves. It is this:—

"If a cylindrical piece of zinc is placed near the top of a broom-handle, and another about fifteen inches below, connection being made between the two by means of a wire, a person taking hold of the top piece with the right hand, while the left is placed on the copper or lower piece, forms a voltaic circle, which becomes powerful the more the broom is used. The hands must be without gloves so that the metals are in contact, and the windows of the room should be open when the broom is used, so as to admit the air freely. The discovery is invaluable to females in a weak state for want of active life, and for males it can be applied to axe handles."

We sincerely recommend the application of this discovery to weak persons of both sexes.

Worth Trying.

A lump of wet saleratus applied to the sting of a wasp or bee, will stop the pain in one moment, and prevent from swelling. It is a sure remedy for rattlesnake bites if applied immediately.

Anthracite coal was pronounced a humbug only 40 years ago.

Clipper Ships---American and English.

The Niagara Mail says, "two British ships, the Crysolite and Stornaway, have sailed a race from Canton with three American vessels, the Racehorse, Surprise, and Challenge and the result is that both British ships have got home *first*, the American not having yet arrived," and adds, "and perhaps the Scientific American, who is an amateur in this sort of thing, will tell us the difference *here* between losing a race and being beat." We can, for we know all about it; the Chrysolite and Stornaway, (both Aberdeen built clippers,) left Canton 11 days before the American ships. We never like to make reckless statements; with an intention to mislead.—Whenever it is shown that a British clipper ship has beat an American one in a fair race—day for day—we will give the winning ship full credit for the same, and not feel the least chap-fallen. The Mail will now no doubt perhaps be kind enough to tell us since we have answered its question, why is it that none of the British skippers or ship builders have yet taken up the Boston challenge of £10,000 for a race from London to Canton and back between two ships, American and British of 1,200 tons burden each. If the British ships are swifter sailers, why do they fear to take up the challenge. There is more money in London than Boston, yet there the Boston challenge still stands unaccepted. Jonathan has thrown down his mailed glove to John, and he has not yet dared to lift it. If the people in Canada have such confidence in the Bitish ships, why do they not take up the challenge?

Color of the Sun.

Busolt allowed the sun to fall through the six-foot heliometer of the Konigsberg observatory first upon white paper, and then upon a disc of the finest gypsum cast on a mirror. He believes that he has discovered the peculiar color of the solar spots to be purple, and that they are surrounded by a splendid yellow, and a larger pale yellow halo. The sun itself is said to present a colorless surface which is sprinkled over with purple spots.

Perpetual Motion.

It is a well known fact to us that many of our countrymen have an opinion that the French Academy of Sciences, and the British Royal Society have standing offers of great prizes for the discovery of perpetual motion, and squaring the circle. With respect to the former problem, at the last meeting of the French Academy of Sciences, a letter was read from the American Consul, Mr. Goodrich, requesting, in the name of one of his fellow-citizens, information relative to a prize said to have been proposed by the Academy for the discovery of perpetual motion. It was unanimously—

"*Ordered*, That Mr. Goodrich be informed the Academy has not only proposed no such prize, but it has adopted a rule that no communication relative to such a subject be taken into consideration.

South and North Carolina Railroad.

The railroad from Columbia, to Charlotte, N. C., was opened to the public on the 28th of Oct. last. It is 108 miles long, and passes over the Catawba river by a splendid granite bridge having 9 arches. The grading is going on from Charlotte to Salisbury Central Railroad, N. C., so that in a few years we can leave Chester for New York without having to cross the briny deep to cross between Charleston and Wilmington. Yours C. H.

Chester, S. C.

Anastatic Printing.

Joseph Dixon, of Jersey City, an able chemist, is the discoverer of anastatic printing. He invented the art of taking true copies from books and pictures long before Appel, and copies of his workmanship have been preserved in our Patent Office. He is the gentleman who deserves both the name and the fame of its original discoverer.

Gold in Canada.

A letter from Toronto states that gold has been found at Rennsta, a few miles south of Owen's Sound. At the last accounts 150 men were working the mines, and many others were preparing to leave Owen Sound for the diggings.

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Machinery and Tools as they are.---The Steam Engine.

(Continued from page 91.)

LOCOMOTIVE ENGINES—The locomotive engine, since its first introduction, has not undergone such alterations in form as might have been expected from the amount of mechanical talent employed in this department of industry. This is probably owing to the fact that a good arrangement was at first adopted, so that science and ingenuity were afterwards employed in improving the original model, and not in contriving a second. Perhaps the changes which are most conspicuous are in the arrangement of the cylinders, of the wheels, and of the springs. The first-named alteration has, in fact, given distinctive appellations to the two classes into which locomotives are generally divided, and "outside" or "inside" cylinder engines are the ordinary terms adopted when speaking of railway motors. The reasons for these different positions of the cylinders, we will enter upon as we proceed, but will previously review the general form of the Locomotive. The most important part is the Boiler, since both the speed and tractive power depend upon its capacity for generating steam; to say that it is not an economical form of boiler is unnecessary, for this deficiency is generally known, but it is equally certain that it is well adapted for the rapid formation of steam—a fact of extreme importance, since the only limit to the speed of a locomotive is in the inability of the boiler to produce steam sufficiently fast, and hence we find the only correct expression of the power of this description of engine to be that which states its evaporating ability. The employment of a number of small tubes to convey the hot air to the chimney, and the great draught caused by the use of the blast pipe, are the chief causes of the peculiar excellence of this sort of boiler, the quantity of whose heating surface, according to the best makers, we will here mention. An engine, with cylinders of 18 inches diameter and 24 inches stroke, had 156 square feet of direct heating surface, and 2,090 square feet of tube surface: another engine, with cylinders of 10 inches diameter and 15 inches stroke, had 88 tubes, each 2 inches diameter, the boiler being eight feet long, and the fuel used in them coke. The space allotted for steam is necessarily small, and the continual agitation of the water, caused by the rapid motion of the locomotive, tends to mingle water with the steam, or, technically, causes the latter to *prime*, a considerable evil, to prevent which many steam chests are provided with a sort of inverted cone, made of sheet iron, having an aperture in the centre, through which the steam passes in its course to the steam pipe, which is continued above the aperture. The effect of this arrangement is, that the water, in its ascent, is intercepted by the conical plate and flows back. Another plan to check *priming*, and yet to do away with a steam-chest, has been lately introduced, the steam pipe extends the length of the boiler, and is not bent upwards as usual to receive the steam, but takes it through a series of small slots perforating the upper part. The regulator (such being the name by which the throttle-valve is known), is made in various shapes, originally it consisted of two plates or discs, placed together, and with apertures which were made to coincide or not, as required; another form often adopted is the slide valve, and a third plan is to make the steam-pipe, where it forms two branches, enter a box *truly* bored, in which rotates a valve, so shaped as to close the apertures to the branch pipes as required.

The cylinders were originally always placed inside, between the wheels, and were inclosed by the smoke-box, long connecting rods communicated the motion of the piston to the cranks, so that the whole of the machinery was within the outer framing, and did not project beyond the track. This mode of construction required that the driving-wheels, which are keyed on to the crank shaft, should be placed nearly in a central position with relation to the boiler, in order that the cranks might revolve, which would be impossible if approached nearer to the fire-box. It is evident that this position of the wheels is objectionable for, as it is necessary to keep the driving wheels firmly pressed against the rails (the tractive power being derived from them alone) the locomotive frequently, during its progress, acquires what is commonly termed a see-saw motion, or, technically *rides* the points where the wheel touches the rail serving as a fulcrum. To remedy this defect, the cylinders were placed outside the boiler, to which they were firmly attached, the axle of the driving wheels was made straight, and could then be placed in a safer position, and even under or beyond the fire-box. In this plan of construction a crank was cast on the outer side of the hub of each driving wheel to which the connecting-rod was attached, greater longitudinal stability was thus attained, but the cylinders necessarily projected over the track, often causing a swaying side motion, which threw many engines off the track; for this reason the inside cylinder locomotive is still extensively used. A combination of the two principles has been lately introduced, the inside cylinders and crank shaft being retained, but no wheels are placed on the latter, its motion being communicated by coupling rods to the wheels on the other axles.

With respect to the number of wheels, originally only four, there are now usually six and sometimes eight; the truck frame, an invention of this country and which is now so much used, is too well known to need description, an improved truck of the kind is illustrated and explained on page 68, Vol. 8, Scientific American.

The arrangement of the springs has lately been the subject of many investigations and trials. In one species of locomotive which has the driving-wheels placed behind the fire-box, thus allowing of a very low centre of gravity, the central pair of wheels has very light springs, merely acting as safety wheels in case either of the other axles breaks, or else the boiler is supported by one spring between the two axles. This arrangement has the effect of throwing the greater part of the weight upon the two end axles, and the centre of a cross spring behind the fire-box carries the weight of this end of the boiler, so that it is very steady from resting on three points. By another plan, instead of fitting a spring to each wheel, only two on each side of the engine are employed, and these (instead of their usual position, which gives a direct action upon the axle boxes) are inverted and placed between the wheels longitudinally, iron beams connect the axle boxes on either side, and also receive the pressure of the springs, so that a uniform weight is maintained on all the wheels, irrespective of any irregularities in the level of the rails.

The manner in which the slide valves are worked, is in all classes of the steam engine a subject of considerable importance, and has been well studied by the constructors of locomotives. In the marine engine but one eccentric is used, which is loose on the shaft and is maintained in the proper position by stops, but in the engine that we are now discussing two fixed eccentrics are employed for each valve, to give the forward or retrograde motion, either of these, as required, is made to work the valve by bringing a notch, formed at the end of the eccentric rod, into connection with the weigh-bar. A more compact mode is now very frequently employed, and consists in attaching the ends of the eccentric rods to the extremities of a segmental frame. A corresponding curved slot is made in this frame, in which slides a steel block connected to the valve rod, the frame moving to and from on a joint at its centre. When, therefore, the machinery is in action, it is evident that the eccentrics will impart a rocking motion to the frame, and thereby move the valve. To shift the position of this latter, it is only necessary to raise or lower the frame, which, it will be perceived, can be used to work expansively, to effect this last-named purpose, many modes are also adopted, which, however, are not peculiar to the locomotive. When we consider that the slide valve of an 18-inch cylinder, with the steam at 100 lbs. per square inch, will have to move under a pressure of 1400 lbs., and that the two slides would thus require 35 horse-power to work them, we shall be convinced that an equilibrium valve is more required in this instance than for engines where it has long been employed. Some devices have already been proposed and introduced, one of which employs one valve casing for the two cylinders, and forms the backs of the valves in such a way as to have the desired effect.

(To be Continued.)

Beet Root Sugar.

M. Isnard, the French Consul at Boston, gives the following account of the manufacture of Beet Root Sugar, in a letter to the editor of "L'Invention":—

"In 1810 I conceived the project of establishing, at Paris, a factory for making Marseilles soap, that is, a composition of olive oil and soda. Before undertaking it, however, I determined to pursue a course of special chemistry in its application to soap-making, and for this purpose I cultivated the acquaintance of M. Baruel, who was employed in the Laboratory of the Ecole de Medicine at Paris. Having been shown by this latter some beet-root sugar, and knowing the importance attached to the manufacture of a home-produced article by the government, I made experiments on a larger scale in conjunction with M. Baruel, and finding that it could be manufactured for between 20 and 24 sous per pound, I directed a memoir to the government, which was published in the "Moniteur" of March, 1811. After several interviews with the Minister, which were unsuccessful, a sample of the sugar was presented to Napoleon by M. Chaptal, who donated 120,000 francs for establishing the manufacture, observing, with regard to a loan of that sum which had been requested for the purpose, "I do not lend, but give it." Subsequently, by the imperial decree of March 25th, 1811, M. Baruel and myself were nominally gratified with the necessary sums for the formation of two experimental schools, and shortly after we were credited by the Minister of the Interior for the sum of 10,000 francs, M. Baruel on the Pretect of the Department du Nord, and myself on the Prefect of the Bas Rhin. Not being satisfied with the conduct of the Prefect, nor the quality and price of the beet-root, I obtained permission to remove my establishment to Pont-a-Mousson, Department de la Meurthe, where I formed a partnership with two rich capitalists. After having erected a building capable of producing from 1500 to 1800 pounds of sugar, I demanded of the Prefect of the Bas Rhin the 30,000 francs remaining due. But we were on the eve of 1814, and this Prefect had other things to occupy him besides sugar. Strasburgh was shortly after blockaded, and Pont-a-Mousson attacked by the Cossacks; our work was stopped, five-sixths of our beet-root rotted, and our enterprise was ruined. Being occupied in the process of saccharification by means of sulphuric acid for applying it to distilling from potatoes, I was engaged by a wealthy individual in the United States to come over and erect a vast establishment of this kind. On my return to France, in 1837, I petitioned the government for compensation for the 30,000 francs yet due to me, but was refused, although its justice was not contested; I was, however, named to the office of Consul at Boston, on the re-establishment of a Consulate at that place, where I had for five years previously exercised the duties of Vice Consul.

[For the Scientific American.]

How to Elevate Water from Rivers.

To your correspondent from St. Paul's, Minnesota, who lives on the east bank of the Mississippi, on an elevation of about 100 feet above the river, I would just say, for his benefit and all others like situated, that I live at Ossipee Centre, N. H., on the east bank of the Danhole river, on an elevation of 90 feet and distant 300 feet from it, and after spending some $150 in trying to get a well, but without success, and thus being driven, from the necessity of the case, to study out some plan for raising water from the river; after several efforts on a small scale, I put the plan which I deemed best in successful operation. For almost four years it has supplied all our village on the east side of the river with water, forcing up 120 gallons per hour. I will describe it in as few words as possible: first, I laid under ground, from my house to the river, wrought-iron pipe of one inch bore (lead pipe of any reasonable thickness will not bear the pressure); I then connected with the pipe a small copper force pump, 11 inches long and 2 3-4 inches bore, and in said coupling I set a piece of pipe upright, of two feet long, with an air chamber of cast-iron of about five gallons' capacity, in order to ease the force of the pump against the downward pressure of the water in the pipe. I then commenced a penstock on the bank of the river, several rods up, and thereby obtained a fall of 3 feet, to which I attached a wheel 3 feet long by 3 feet diameter, with a 4 inch crank, which gives 8 inch stroke on the pump, and forces up the quantity of water above stated without further trouble. JOHN MOULTON.

(For the Scientific American.)

To Prevent Lamp Explosions.

I wish to communicate to you the result of my experiments in making the spirit lamp nearly if not quite safe. I have made my common lamps, as I conceive, free from the danger of exploding, simply by filling the body of the lamp with coarse clean sponge in such a manner as to leave no spaces occupied by the fluid as a liquid free to run. You will perceive that when the lamp or rather the sponge is filled with fluid, that if by accident it should be upset, the fluid cannot escape from the sponge in consequence of being held by capillary attraction, therefore, as far as the danger of setting fire by spilling is concerned, the sponge prevents it. Again, the danger of explosions does not consist in the fluid being explosive, but the vapor which arises from it, which vapor occupying that (upper) portion of the lamp having no liquid in it, issues out from the screw aperture, and if a flame be within a few inches, it takes fire and explodes, carrying fire to whatever fluid may be left in the lamp. Now, the sponge which fills every portion of the lamp, leaves no space (comparatively) unoccupied, to hold this vapor, hence the amount of vapor which can possibiy be in a lamp at any time cannot do much damage, as I have frequently shown to my friends by taking off the screw and bringing it in contact with a flame, the fluid held by the sponge would simply take fire and continue to burn until exhausted or blown out. It may be objected to on the ground that the lamp would have to be made much larger than is usual to make up the difference of the space occupied by the sponge—on this point I would say that I tried the experiment with two lamps of the same capacity, and found that there was but ten minutes difference in the time of one hour, the sponge burning one hour, and the plain lamp one hour and ten minutes, so that this is no proper objection. I have now used lamps arranged in this way for a year or more, and would not use the fluid in any other manner. I have nothing to make by publishing the subject, save the satisfaction of doing some little good in saving life, &c. O.

Measurement of Logs.

MESSRS. EDITORS—In the Scientific American for Nov. 20, a table of lumber measure is given which will not answer in this section, because lumber is too scarce. The following rule is that which is generally adopted in this part of Jersey and in Pennsylvania:—Extract the square root of half the square of the diameter, which gives the side of the greatest square contained in the circle; the other, and most simple rule, and that which lumbermen find most convenient, is to multiply the diameter by 5 and divide by 7, which will also give the side of the square, which, when once found, the number of feet of lumber measure can easily be found in one foot of the log's length; then multiply the whole length of the log by the one foot, and you have the number of feet in it. I could give you a large table of diameter of logs, but I do not wish to trespass on your columns by many figures.

CHAS. E. MOORE.

Groveville, Mercer Co., N. J.

Iron Floors and Roofs.

M. Liandiere, a locksmith of Paris, has contrived a new form of iron plate for floors, roofs, bridges, &c., which promises to be hereafter generally employed for such purposes—as neither keys nor bolts are required for joining, and the plates can be put up very easily, in a very short time. The advantages are less manual labor, perfect solidity, less space and less thickness in the flooring, no fear of fire, &c.

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NEW INVENTIONS.

Felloe Machine.

John Sitton, of Columbus, Miss., has taken measures to secure a patent for the above. This machine, which the inventor denominates the "Wheelwright's Assistant," is intended to perform the various operations of boring the hub, forming the tenons and shoulders of the spokes, and also *holing* the felloes. An important improvement is in the use of two circular plates, one lying on the other, and capable of revolving. These plates serve for regulating the distances between the spokes, as the top one carries the hub while being bored, and the wheel when the tenons are being cut. This arrangement, when fixed for boring, &c., is held in position by pins acted on by springs. The auger carriage moves back and forth on an adjustable way or bed, which can be fixed to suit different-sized wheels, the carriage is made to advance by means of a cord and weight, and is drawn rapidly back by operating a treadle. The tool for cutting the tenons and shoulders of the spokes is of a peculiar shape, and acts more perfectly than other tools, both for cutting and also regulating the depth of the tenons and also for squaring the shoulders. An adjustable bench for boring the felloes upon, can be attached or removed as required, this is furnished with an arrangement for holding the latter, and is so contrived that the bench need not be shifted when the end of the felloe is to be bored, but merely a movable pin. In addition to all these improvements there is a neat mode of regulating the size of the wheels by an index plate properly fixed.

Auger Handle.

An improved Auger Handle has been lately invented by Willis Churchill, of Hamden, New Haven Co., Ct., who has taken measures to secure a patent. The advantages of this handle are, that the auger can be very quickly taken out without much trouble, and a smaller auger be substituted, which is tightened in its place by a rapid turn given to a part of the handle. It is, moreover, much stronger than in the case of those made by the ordinary arrangement. Its principle consists in forming the handle in two parts, each having a screwed rod, on which works a cylindrical nut: one of these nuts has two eye-pieces cast on it, and the other has one similar eye-piece. When the auger is to be fixed, the two parts of the handle are placed together and the tool inserted in the socket. It consequently passes through the three eye-pieces which are so arranged that the single eye lies between the two which are on the other nut, hence both parts of the handle are held together by the stock of the auger being passed through the three eyes. But if the stock be not sufficiently tight, it is only necessary to turn one half of the handle, when its nut will be moved along the screwed rod, and drawing its eye-piece with it, will cause the auger to be firmly held.

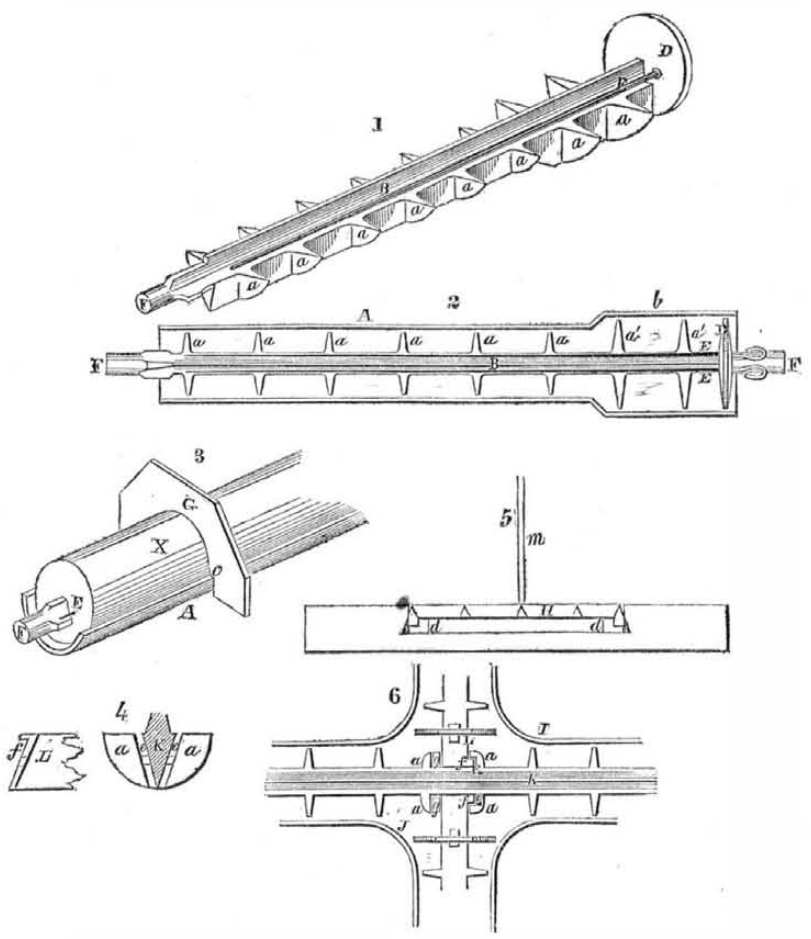
Improved Windmill.

Measures to secure a patent for an improvement in Windmills have been taken by A. Osborn, of Albany, N. Y. This improvement is intended to facilitate the construction of the wings or sails so as to give them the proper curve. Practice has proved that the wings, where they join the centre or hub, should have an angle of about 20°, and the outer ends of the wings an angle of about 7°, a gradual curve following the length of the wings. The inventor obtains the desired form by using two circular rods, which are placed one on each side of the sails or wings, and near their outer edges; these rods are connected by clamps or adjustable screws, so as to be brought nearer to each other, as required. These rods also serve as a fly or balance to the wings.

Carriage Spindle.

The common heavy cast-iron sleeves, which are much used for axles, are exceedingly clumsy, so that many prefer to use the wooden axle alone, while others are made entirely of iron. A contrivance to obviate this defect has been made by Thomas Mills, of Clearfield, Pa., who has taken measures to secure a patent. The invention is intended to introduce the use of a sleeve or tube made of light wrought-iron plate, which gradually tapers so as to fit on the tapering end of the spindle to which it is bolted. A shoulder collar, with two straps, fits tightly on this sleeve, and serves also as a shoulder for the axle to which it is secured by a screw bolt and nut. This arrangement materially strengthens and braces the spindle. The sleeve is made by cutting a thin piece of boiler plate to the proper size and shape, and then, after heating it, passing the plate between three tapering rollers, one of which is adjustable. The edges of the tube are afterwards brazed together, a couple of rings being employed to secure it from opening during the process.

IMPROVEMENT IN PIPE MOULDING.



The annexed engravings are views of a valuable improvement in the moulding of cast-iron tubes, invented by George Peacock, of West Troy, Albany Co., N. Y., who has taken measures to secure a patent for it.

Figure 1 is a perspective view; fig. 2 is a plan view of the core-bar placed in a core-box; figure 3 is a perspective view of the core, showing the manner in which the upper half of the core is rounded or finished by the sweep; fig. 4 are sections showing the manner in which the core bars are jointed, or connected, in order to form cores for branch pipes, elbows, &c. Fig. 5 shows the manner in which the core-bar is anchored or prevented from being raised by the melted metal. Fig. 6 is a plan view of two core-boxes, intersecting each other, with the core bars placed in them and jointed. This view shows how cores may be formed with facility for elbows, branch-pipes, &c. The same letters refer to like parts.

A, in figs. 2 and 3, is a core-box, which is merely the half of a pipe cut longitudinally through its centre, and which serves in the place of an ordinary pattern. B, fig. 1 and 2, is the core-bar, formed of a lozenge-shaped bar, having a series of semicircular wings or projections, *a*, on its lower half; D D are collars, one only is seen in figures 1 and 2; these collars are placed on the core-bar, one at each end, and turned to fit the core-box, A, or to be of the size required for the pipe intended to be cast; E E are vent-rods, which rest upon the upper surfaces of the wings and on each side of the bar. F F are cylindrical handles, by which the core-bar is lifted when necessary. The core-box, A, is of the size and form of the pipe intended to be cast; it is properly adjusted in the sand, and the core-bar placed in it, as shown in fig. 2; the core-bar corresponds in shape to the core-box; that is, any portions of the pipe that are larger in diameter than another, are opposite proportionably larger wings (see the end, *b*, of the core-box and wings, *a'*, fig. 2). The core-bar being adjusted or placed within the core-box, green sand is packed or pressed all around the lower half of the core-bar, and between the wings, *a*, thus forming a perfect half cylinder of sand on the lower half of the core-bar. This being accomplished, the upper part or surface of the core-bar is covered with green sand and piled up till it reaches a necessary height. A sweep or gauge, G, fig. 3, of a semicircular shape, is then drawn over the sand and the upper part of the core-bar, X, to remove the surplus sand, as shown in figure 3. The sweep, G, has small shoulders, *c*, which rest upon the upper edges of the core-box, and serve as guides. The larger portion of the core, which fits the part, *b*, of the core-box, is rounded by a larger sweep than G. The core being now formed, the vent rods, E E, are withdrawn, whereby vent holes are left in the core for the escape of gas and steam, while the molten metal is being poured into the mould. The core is lifted or raised from the core-box by the handles, F F, the wings, *a*, binding and holding the sand to the lower part of the core. The core is then adjusted in the mould (the core-box being removed), the collars, D, on the ends of the core-bar resting on the ends of the flask. Any length of pipe may be cast in this way, for the core may be anchored and prevented from raising, by means of metal strips or bridges, H; one is represented in fig. 5. These strips or bridges fit in recesses cut in the upper part of the core bar, and rest upon wooden supports, *d d*. An anchor or rod, *m*, rests or bears upon the upper part of the bridge; the opposite end of the anchor being secured to some permanent support. When the liquid metal is poured into the mould, the anchors prevent the metal from forcing up the core. After a certain time the wooden supports, *d d*, burn out, and the strip or bridge will fall in the recess, and the anchor may be withdrawn, also the core. Any number of these bridges, according to the length of the pipe, may be employed. The upper part of the core is not quite as high or deep, as the lower portion to which the wings are attached. This is for the purpose of allowing the core to be easily withdrawn from the pipe after it is cast.

The core-bar, in common use, is formed of a hollow cylinder covered with small projections; it is placed on a pair of tressels, and the sand is pressed upon it. A second person then revolves or turns the bar, and the superfluous sand is taken off by a gauge similar to a rest for a lathe. This is a slow and uncertain process, and can only be applied for the casting of short pipe. Any length of pipe may be cast by forming the core in the new mode represented, and the pipe may be of any desired thickness. The pipes cast by this process will sustain a pressure of 500 lbs. Any kind of pipe, lamp-posts and bridge tubing may be made in this manner. The wings, *a*, may vary in shape according to the form of the article to be cast. For round pipes the wings are made semi-circular; for hexagon, the wings half hexagon, &c. For elbows and branch pipes, the core-bars are jointed, as shown in figs. 4 and 6. Suppose I to be the main pipe, and J a branch pipe intersecting the main pipeat right angles (I and J we also call core-boxes), K is the core-bar of the main core-box, I, and L is the core-bar of the branch core-box, J. The core-bar, L, is jointed to the core-bar, K, as follows:—The bar, L, is composed of two parts, and one end of each part is connected at opposite sides of the bar, K; the two parts of the bar, L, being in line. The end of each part of the bar, L, fits between two wings, *a a*, on bar K, and a recess, *e*, is made in the inner side of one of the wings in which the projection, *f*, of corresponding size on the side of bar L, and at its end, fits. This projection is secured in the recess *e*, by means of a wooden wedge, *g*, which is driven tightly between the bar, L, and the adjoining wings. When the core is formed and adjusted in the mould, the molten metal burns out the wedges, and the core-bars become detached from one another, and may be readily withdrawn. The core bar, so constructed and applied, the anchoring of it, whereby the wooden supports are burned out by the molten metal to allow the core to be withdrawn; also the manner of jointing the core-bars for making elbows and branch pipes, as described, are the leading and important features of this improvement.

More information may be obtained by letter addressed to Mr. Peacock.

Cotton Topping Machine.

Measures to secure a patent for an improved machine of the above description have been taken by A. A. Dickson, of Griffin, Ga. This machine will perform the work of topping the cotton and lopping off the ends which bend over the rows in a most perfect manner. It can be made cheap and light, and one man suffices to work it. The principal part of the framing is formed similar to a wheel-barrow, and the wheel which serves to propel it also communicates motion to the cutting apparatus by means of twe bands or belts running over small pulleys formed on the sides of the propelling wheel. Two sets of cutters are employed, one for topping and the other for lopping off the ends of branches. The latter operation is performed by cutters that are placed vertically on a horizontal shaft; the topping is effected by horizontal cutters on a vertical shaft. These latter are made adjustable so that they can be arranged to suit the different heights of the cotton plant, and also the different widths of the rows.

Improved Cement.

A new and useful composition for covering roofs of buildings, &c., has been invented by Thomas Scholey, of Peoria, Ill., who has taken measures to secure a patent. It is also applicable as a coating for pipes or for covering walls, &c., and possesses many advantages that render it superior to other cements. Some of these latter, particularly those applied to roofing, are liable to crack in cold and to get soft in warm weather, neither of which evils occurs in the above-named composition. This new cement is hard, so that it can be polished to any extent, but from the nature of the materials employed, is slightly elastic and incombustible, it has likewise moisture-repelling qualities.

The English are beginning to send coal to Vienna. They have a depot at Dresden, from whence they are sent to Prague, and are there cheaper than Austrian coal.

A specimen of the bread made from bread fruit, has been exhibited in the Boston Exchange. It is a thin, semi-transparent sheet, of a bright brown color, and in no respect resembles any preparation of bread among us.

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Scientific American

NEW-YORK, DECEMBER 11, 1852.

Public Lectures---Lost Arts.

It has become a mighty fashion now to have public lectures in all our large and small cities—it is quite the rage—and a very commendable passion it is if rightly directed;—but this we believe is not always the case. Men of note as fancy speakers and authors are generally the selected lecturers; they tickle the ear and captivate the heart for the passing hour, but instead of making the hearers "wiser and better," those who believe all they say, are often made more ignorant than they were before. A great amount of trash is also uttered in some public lectures; there is little that is truly instructive or really true.—Now, as "the true is the beautiful," we must say that the universal taste or passion is for the glitter and gaud of the uncertain, in preference to the true. A respectably large audience could not, we believe, be obtained in all this city to hear a course of lectures on Natural Philosophy, while at the same time crowds go to hear mere opinions expressed about Dean Swift and the English Mind, and so on.—These things are all very well, but they do not exhibit a strong healthy public pulse, when the weighty matters of science and art, as was found in the case of Prof. Agassiz' lectures, are neglected. Some of these lecturers also do not exhibit that amount of correct knowledge which we expect of them. On Wednesday evening, the 1st inst., Wendell Phillips, of Boston, delivered one of the course that are called Popular Lectures, in the Tabernacle, this city, and although a very eloquent and humorsome speaker, his information is not altogether to be relied on. The subject was "The Lost Arts," and we must take exception to much of what he said. He asserted that in all that relates to works of the imagination and the fine arts, we were far behind the people of antiquity. This we do not believe. Shakespeare, Milton, and Burns stand above all the ancient poets, and Raphael, Angelo, Canova, and Thorwalsden, all moderns, were at least equal to the ancients in painting, sculpture, and architecture. He said very truly, that "we were apt to think our age the greatest, and that the ancients knew nothing." We are indeed too forgetful of the benefits we have derived from our ancestors, but at the same time there are some who reverence everything that is old—good and bad, and with an antiquarian taste, deride that which is new and better. There is much ignorance displayed by mere literary men, about the present state of the arts, and Mr. Phillips exhibited not a little. With respect to glass he said:—"This beautiful material that administers so much to our delight and comfort—did the ancients know of it? Even at the time when some skeptics were disputing upon this very question, the peasants broke into a house among the ruins of Pompeii which was filled with it. The lie and its refutation came thus together. It was like Dr. Lardner in 1839 writing a pamphlet to prove that a steamship could not cross the Atlantic, while in that same month the Sirius made her voyage to this country.

Instead of not knowing of glass, the ancients knew more than we do about it. In the first place, they understood the process of transfusing the color through the glass. Sir George Wilkinson brought from Egypt a small piece of glass, in which there was a figure of a duck, protected by another glass and then covered over again; and all this without destroying its beauty.

But I pass to the inquiry, whether they used glass for microscopes and telescopes? If you look at the History of Astronomy, you will find that the Hebrews and Egyptians were acquainted with the shape of the earth.—We also read that the Iliad was put into a nut shell by Alexander. Now this could not have been written in so small a compass without the aid of spectacles. We are also told that Nero had a ring of a peculiar shape and nature, that he looked down into the ring as he sat in the Coliseum, and could see the players distinctly. We are, therefore, led to believe that Nero had an opera-glass."

It is a common opinion (inexecusable in an educated man), that the moderns cannot make as good colored glass as the ancients. This is all nonsense; they can transfuse all colors into the glass, and the manner of covering the duck is quite a common trick among our glass makers. We have seen a miniature on ivory covered with glass and set in a glass frame in England—the glass fused all around it, and not a tinge of light or shade altered. Could the ancients do that? This miniature was formerly in the possession of Dr. Beck, of this State, who used to exhibit it in his chemical lectures. In glass making, the moderns far excel the ancients. The ancients *may* have been acquainted with spectacles, but it certainly requires a spectacle vision to discover any evidence of the same. As for telescopes being known by the ancients, Mr. Phillips draws largely upon his guessing powers. The remark about Dr. Lardner is incorrect; he never wrote any such a pamphlet, and never made any such assertions. A man of education, who lectures to instruct the public, should draw his information from good authority instead of troubadour paragraphs which have appeared in some newspapers. Dr. Lardner has denied over his own signature, that he ever said "a steamship could not cross the Atlantic." The common belief that the ancients were acquainted with malleable glass, is founded on as great a historical error as that committed by Reese, who says, "a fossil glass is wrought by the Americans and used instead of iron." It is our opinion that there was not a single art known to the ancients which is not known to the moderns. Some arts, it is true, were lost during the dark ages, but they were all re-discovered, and nothing can be shown as works of ancients which cannot be done now. It is true we have learned much from the giants of old, but then we know all they ever knew, and can do all they could do, and a great deal more. The common opinion about "the lost arts,"—that the ancients were acquainted with arts about which we are ignorant, is a legend stamped with about as much truth as the story of "Jack the Giant Killer."

New York Harbor and Dirty Streets.

Charles H. Haswell, U. S. Navy, Engineer and Surveyor of the New York Board of Underwriters, has addressed a very sensible and interesting letter to the President, W. R. Jones, of said Board. He asserts that the reprehensible practice of covering newly paved cobble stone with sand some inches deep, and allowing it to remain to be carried down the sewers and into the docks by rains, is proving exceedingly injurious to the free navigation of the harbor. Were it not for the dredging machines continually in operation in our docks to remove the dirt carried down the sewers they would soon be filled up. The expense of dredging is enormous, while the manner in which it is conducted is more like the work of insane persons than men pretending to common sense. What do our readers think is done with the dirt excavated from our docks by the dredging machines? "Taken and wheeled up on dry land to fill up pools behind banks, &c., every one will say." No such thing, that would be too sensible a method for our lazy, unthinking gothamites. It is taken from our docks and dumped out into the bay—'transferred from the slips to the channels of the rivers which bound our city." It is not carried out to the ocean; the tides roll it backwards and forwards, and some of it comes back to the very docks from which it was originally taken. Is not this a wise system for the sharp men of New York to be pursuing? With the increase of our city, if the same system continues for 30 years longer, the channels to our city will be shoaled up, and New York will become an exclusive resort for oyster boats and such like craft, instead of being as it is now, one of the finest and deepest harbors in the world. Mr. Haswell recommends that our streets should be kept clean, and that a new system of contracting for the removal of filth should be adopted. "The free navigation of our bay is involved in the cleanliness of our streets. This is what he asserts; we have no objection to the plan he recommends for keeping our streets clean, we like it, but we have something to say which he has overlooked. There is no necessity for covering newly paved streets with sand and allowing it to remain for some time, under the pretence that it is necessary. The covering up of the newly laid stones with sand is to hide bad work, and put money into the pockets of the paving contractors. We have seen plenty of street paving in our lifetime, but never have we seen work done so wretchedly as in New York City. The stones should be laid down snug and rammed hard at first, and then all the loose sand swept off. We shall be glad when all our streets are laid with the Russ pavement, no loose sand is left after it. The cobble stone pavers will then discover that Othello's occupation is gone, and it was principally owing to their inefficient, unscrupulous, and miserable methods of working.

Give us Cheap Gas.

The city of New York contains the most patient, suffering population in the world.—Their rulers, every public chartered company, every city contractor, and every speculator favored by these rulers, enjoy the most delectable privilege of getting the greatest amount of money out of the "dear people." The taxes of New York City are much higher than those of any city in the world, and no city is so poorly served. The citizens of New York pay $3 for every 1,000 cubic feet of gas they use, and the gas companies sell all the coke, (the refuse of the gas retorts,) for $3,50 per ton. We do not know how much the gas companies pay now for their coal; we know that they charged $7 per 1,000 feet of gas made from resin five years ago, and we presume the raw materials now used for making gas are much cheaper. The coal, we believe, comes from Liverpool, and may cost $12 per ton—a most extravagant price. Well let us see what a ton of the best cannel coal will do and then we will have some idea of profit and loss—what gas can be made for, and what citizens should pay for it. A ton of the Scotch cannel coal produces 11,850 cubic feet of gas, and about 44 per cent. of coke, which at $3 for 1,000 cubic feet of gas will make $35,55, and allowing the coke to be 44 per cent., (sold at $3,50 per ton) it will amount to $1·54+35·55 =$37·09 for the product of one ton of coal at $12, consequently, for the simple expenditures and profits connected with one ton of coal made into gas and supplied to our citizens, the gas companies of our city have the exceedingly favorable balance of $25,9. It is our opinion that good cannel coal can be obtained from Virginia for as low a price as $7 or $6 per ton, and if cannel coal was taken from Glasgow instead of purchasing the inferior Liverpool coal, a great saving in that quarter would be effected. As we said before, we do not know exactly what our gas companies pay for their coal; we have put it at a high figure and have shown the results, and we can give chapter and verse for the alleged gas product of good coal, and none other shonld ever be used.

The price of gas, we think, might be safely reduced to $2 per 1,000 cubic feet. If reduced in price, almost every private family would use it in place of oil, camphene, &c. We hope our gas companies will see to this; it would be the means of preventing many of the casualities which are constantly occurring from the use of volatile hydro-carbon fluids, and be a blessing to both rich and poor.

Coke for Fuel.—The gas companies in this city could sell twice the amount of coke which they make. Orders have to stand for a month before they can be filled; and we presume that if coke could always be furnished for the price mentioned, not a single family would use any other kind of fuel; anthracite would find but a poor market here, for the coke is much pleasanter, cleaner, more easily ignited, and has none of that offensive smell peculiar to bituminous and anthracite coals. Every person with whom we have conversed, who has used coke, likes it, and would burn nothing else, if it could be got as easily as coal. We look forward to the time when the volatile products of our bituminous coals, will, in the west, be distilled for many useful purposes, and the coke sent forward to the east and north at reasonable prices for family use.

Sea Island Cotton.

In a very able article on the cotton plant, by Isaac Croom, Esq., in the American Cotton planter, an able new magazine, edited by Dr. Cloud, of Montgomery, Ala., it is stated that the first seed of the Sea Island long staple cotton was sent from the Bahamas to some gentlemen in Georgia in 1786, and the first experiments were made with it on the Sea Islands near the mouth of the Savannah river. The plants did not bear the first year, but the winter proving mild, the rattoons bore fruit the year following, and thus became acclimated. The original seed came from Persia. The successful growth of this world-wide famous kind of cotton is confined to a string of islands stretching from Georgetown, in South Carolina, to the St. Mary's river in Georgia, a distance of nearly 200 miles including a belt of coast not over 15 miles wide.

Safety for Ferry Boat Passengers.

A great many persons fall into, or jump into the river at our ferries, and not a few among the number of such get drowned. It is quite a common thing when a ferry boat is pushing out from its dock, to see persons rush forward to get on board before it departs, and some of them generally imperil their lives by leaping on the boat after it has started off. Among those who have resided in Brooklyn or Williamsburgh for a number of years, and whose business has led them to be regular passengers in the ferry-boats, there is scarcely one who has not at some time fallen into the water, or come very near doing so by jumping after a departed boat. The coolest of men in a hurry, when they see a boat just pushing off, as they arrive, are apt to play the *impatient* by springing after it. We have heard many plans suggested for preventing people from jumping on board of our ferry-boats, but it requires no ingenuity to devise an effectual one. All that has to be done is to board up all communication between the rooms where the passengers wait for the boat, except a small sliding gate under the control of the collector, and whenever he tolls the last bell, he should close it and not allow a soul to pass through until the next boat arrives. The boat should not leave for one minute after the bell is tolled, so that every one inside will be enabled to get on board, but not one outside. This plan would involve no extra expense; it is a simple and certain remedy for people getting into the river by jumping after a departed boat.

State Tariffs on Passengers-

In Africa and among Asiatic savage tribes, the chiefs have to be bribed by handsome presents before travellers will be allowed to journey through their territories. Some of our States seem to have learned intelligent lessons from these savage potentates. Thus New Jersey and Maryland charge the railroad companies 50 cents a head for every passenger—brother and sister republicans of other States—who travels on a railroad through them. It is reported that the present Tory Ministry of England intends to propose a tax on the railroad incomes of that country. Kindred governments have kindred feelings. This is protection by these States to their own citizens, with more than African or Asiatic refinement. "Brother republicans," say these States, "we are all of one family, and we are always glad to see you, but remember whenever you come past our doors you must have 50 cents each of you in your pockets; remember flunkies live by perquisites."

Planing and Sash Machinery.

The attention of our readers is called to an advertisement in another column of this paper for a mechanic to engage in the lumber business at the south. The advertiser is an energetic business man, in whom the utmost confidence may be placed, and his acquaintance at the south will render peculiar advantage to any party who may become engaged with him in the proposed business.

Award of Prizes.

In the next number of the Scientific American, we shall announce the names of the successful competitors for the prizes offered by us for the four largest lists of subscribers.

Communications sent to this office without the real name of the author attached, cannot, under any circumstances receive attention.—This is a rule common with all editors, and no writer should be ashamed to give his name, as it is always withheld from the public if a request is made to this effect.

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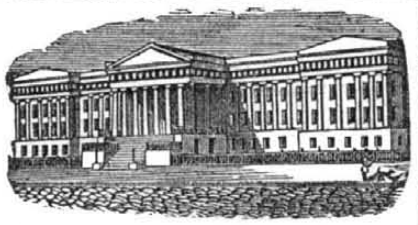

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING NOVEMBER 30, 1852.

SCREWING BOLTS, &C —By John Caswell, of Syracuse, N. Y. (assignor to A. C. Powell) : I claim, first, the movable ways running in yielding bearings, back and forth, under the machine, and supporting the vise, as set forth.

Second, the adjustable stop or gauge on the side of the friction nut working in contact with the movable finger, or any similar projection in the die chuck.

ATTACHMENT FOR CONVERTING THE ORDINARY INTO A PAPER VISE —By J. W. Bliss, of Hartford, Conn.: I claim an attachment to the vise, substantially as described and for the purposes set forth, which attachment is removable at pleasure, and require no change in the construction of the vise to which it is applied.

HOES—By Wm. C. Finney, of Fayette Co., Tenn.: I claim the extension of the blade of the common cotton hoe, upward and backward, in a curve, in such form and manner to enable the laborer, by inserting his instrument and pushing it from him, to remove, by the cutting edge, any grass, weeds, superflous plants, &c., as described.

MORTISING MACHINES—By Jos. Guild, of Cincinnati, Ohio: I claim the sliding wrist connected with the chisel and also with the driving power, in the manner described, in combination with the mechanism described, or its equivalent, for sliding said wrist, so that the operator can, during the motion of the machine, vary the depth of cut of the chisel, or cause it to be suspended without disconnecting the driving power.

ENDLESS BELTS TO THRESHING MACHINES—By J. R. Moffitt, of Piqua, Ohio: I claim the continuous open apron, having its belt formed of links, whose cogs are at one part of their rotation (in connection with the pinions), or means of propulsion, and are, at another part of their rotation (in connection with the rollers or other stationary objects) a means of agitation of the said apron.

PLOWS—By F. E. Richardson, of Hicksford, Va.: I claim mounting the double pointed share upon the central shoulder-piece, and fastening the same by a link piece, as described.

ROTARY KNITTING MACHINES—By Horatio G. Sanford, of Worcester, Mass.: I claim the combination of the mechanism termed the stop-motion, with the rotary knitting machinery of the kind, as specified, the object of the stop-motion being to arrest the operations of the machine on breakage of the yarn.

ROTARY KNITTING MACHINES—By David Tainter, of Worcester, Mass.: I do not claim the combining one or more draft rollers and a take-up roller, or drum, in one frame, which, when put in rotation, shall carry them simultaneously around with it, so as to draw forwards and wind up a rope or cord, or like manufacture, formed of strands twisted together.

Nor the application of a take-up roller or mechanism as used on either a common warp or flat braid knitting machine: but I claim to so combine a draft and take-up roller, and mechanism for revolving it, with a rotary series or set of needles and other mechanism of the peculiar kind mentioned for knitting, that such draft roller shall rotate simultaneously, or with the same velocity, with such series of needles, so as to prevent the longitudinal rows of stitches from being produced in helical lines, and the evil consequences resulting to the fabric therefrom.

Also the arrrngement of the draft and take-up mechanism, in connection with the knitting mechanism, supported by two separate frames, and also their connection with the mechanism for producing an equal and simultaneous rotation of these frames, all substantially as described, whereby there shall not only be no connection between the frames to extend through the fabric but no projection from the frames come in contact with the presser, stitch wheels, and cam bar, or their respective supports, during the simultaneous and equal rotations of both or either of the said frames.

COOKING STOVES—By H. J. Ruggles, of West Poultney, Vt.: I claim the combination and arrangement of the front and rear flues and air chamber, as set forth.

STONE AND EARTHENWARE—By Jacob & Freeman Wise, of Fredericktown, Pa.: We claim, first, the mode of attaching the mandrel so that it may revolve on its axis, by means of friction with the clay, and at the same time be moved from side to side within the mould.

Second, the mode adopted for varying the relative thickness of the different parts of the manufactured article.

GENERATING HEAT—By Wm. Hartell, of Kensington, Pa., and Jos. Lancaster, of Spring Garden, Pa.: We claim the adaptation of, or rendering available tar as a fuel, for the production of the intense and steady heat required for the melting and manufacturing of glass, by introducing water or the vapor of water into the furnace in contact or in close proximity, or in combination or mixture with the tar, in the manner set forth.

RE-ISSUES.

CREAM FREEZERS—By Eber C. Seaman, of Philadelphia, Pa. Originally patented Oct. 3, 1848, and ante-dated April 3, 1848 : I claim the arrangement of two scrapers at an angle with the bottom and sides of the vessel, as described, so that the action of the rotation shall throw the scrapers against the sides and bottom of the vessel.

WELDING CAST-IRON TO MALLEABLE IRON OR STEEL—By Mark Fisher & Wm. Martin, Jr., of Newport, Me. Originally patented Oct. 16, 1847 : We claim uniting the steel and cast-iron, as described, by first preparing the steel, in the manner set forth, and then causing the cast-iron to flow over and upon the surface of the steel thus prepared, in the manner and for the purpose set forth.

DESIGNS.

PARLOR STOVE—By D. Arnold, of Providence, R. I.

FRANKLIN STOVE—By Saml. F. Pratt, of Boston, Mass. (assignor to Jagger, Treadwell & Perry, of Albany, N. Y.)

WINDOW BLINDS—By Nathan Chapin (assignor to Nathan Chapin & J. F. Driggs), of New York City.

A New Steamboat Paddle Wheel.

The following is the description of a new paddle wheel, copied from the "N. Y. Tribune," which copied it from the "Detroit (Mich.) Advertizer." The wheel is the invention of Capt. W. A. Bury :—

"The wheel which he has invented is formed, in all its parts, exactly like the paddle-wheels of a steamboat, with the exception of the paddles or buckets. In the common paddle wheel the paddle or bucket is a solid oblong board, fastened firmly across the two parallel arms. In this new wheel a paddle or bucket is affixed to each arm by a strong hinge in the inside corner of the arm. The two paddles being equivalent to one common one. The paddle itself is an oblong piece of wood, shaped like a wedge and hung in the arm, so that the heavy end is between the arms, and the light end is outside. But the lightest division of the paddle has the most surface, and it is upon this fact the utility of the invention depends. For instance, the wheel revolves, the paddle strikes the water, but it is so hung on the arm at a certain angle, that the outside corner gradually sinks in, and as the wheel revolves, the surface of the paddle meets the water gradually, but so as to press it back against the arm, where it is firmly held by the pressure caused by its own motion through the water; as the paddle rises to the surface, the angle at which it comes out of the water permits the heavy end to fly back against the inside of the arm, and it thus comes out edgeways, exactly on the principle of feathering an oar. The paddle, by the simple operation of the principle of gravitation, remains with its edge directly in the line of the revolution of the wheel till the arm passes the perpendicular, when the paddle falls into its place ready to meet the pressure of the water again."

[Paddles with wedge-shaped extremities are not new; neither is the hinging of them; we have seen a number of models with hinged paddles. They will not answer; they may do very well on a model, but on a large scale will soon go to pieces. The water lift, to obviate which so many paddle wheels have been invented, is obviated by making the wheels of large diameter, or on the Galloway feathering principle. In Vol. 2, page 169, Scientic American, there is an illustrated feathering wheel of Mr. D. G. Smith, of Pennsylvania, and on page 249, same volume, there is a paddle-wheel with jointed paddles the invention of Mr. McCarthy, of Saugerties, N. Y.

Recent Foreign Inventions.

WAX CANDLES.—T. H. Smith, of Hammersmith, England, patentee.—The improvement is in the wick preparation. They are saturated in a solution formed of 4 ozs. borax, 1 oz. chlorate of potash, 1 oz. nitrate of potash, and 1 oz. of salammonia dissolved in three quarts of water. After this they are dried and fit for the waxing.

HAT BODIES.—J. Johnson, London, patentee.—He mixes cork dust mixed with wool or the substances now used for hat bodies, employing fine whalebone for stiffening.

NEW COMPOSITION.—J. Hinks and E. Nicholl, of Birmingham, England, patentees.—The new composition is for making boxes for holding steel pens, &c. It is composed of 3 parts of gutta percha mixed with one part of wheat flour, or with other farinacous substances by heated rollers, and then stamped into shape.

Ventilating and Warming large Buildings.

The following process for the above purpose, is adopted in the Northern Hospital of France :—The air is taken from a tower on the top of the building, so as to be always pure, and in summer cool. It is sent inside in a quantity invariably equal and of the same power, by numerous apertures in the centre of the rooms which it passes along from one end to the other, and issues by eighteen orifices without its action being neutralized by opening one or all the windows. The steam engine is relieved in case of stoppage by another auxiliary one, and in cases of epidemic both act together to increase two-fold the supply of injected air. This engine sets in motion the ventilators for driving the air in all directions and likewise raises the water required for the hospital. The steam is likewise used for warming baths of every kind, as well as for the laundry use, the ventilation, during the whole year, consequently costs nothing. Several boilers are employed to produce the steam for the different duties of the hospital, —to warm the rooms by means of hot water stoves, independent of each other, to ventilate the six wards by a steam engine, to heat the office stoves, the baths, &c., to raise the water and wash the linen. These are placed in a court behind, away from the patients and conveniently to the kitchen. There is an open grate on the ground floor of each building, for those preparations that must be made over a fire, and the heat from the smoke is employed to ventilate the water-closets. The expense of warming the hospital in winter is $2,805, and that of ventilating it in summer $935, which is paid for by the employment of the steam for warming the baths.—[Genie Industriel.

Improvements in Machinery Benefit the Working Man.

There are many ignorant men who speak of the evils which have been brought upon working men by improvements in machinery; there are others also who say that in old times, when ignorance in the arts and everything else was bliss, that the working men had more to eat and drink than now, and that old England was then "Merry England," her people having plenty of roast-beef and plum-pudding, while now, owing to machinery and so on, it is no more Merry England; her mechanics are half starved, and her working men are whole starved. This is all nonsense, improvements in machinery have improved the conditions of all classes, as the following extract from the London Builder will show :—

OUR ARTISANS AND THEIR PRESENT PROSPECTS.—It certainly seems to us that the artisans of the United Kingdom have never had a better prospect before them than they have now. Nothing is to be done without industry, right endeavor, and good conduct; but with these they all may, if they please, maintain themselves respectably, and make satisfactory progress. At the present moment we are disposed to think there are comparatively few really good workmen out of employ, and while bread and other necessaries of life are cheap, wages are high. . . . .

"At the present day, a Manchester joiner, who earns 4s. 4d. for ten hours' labor, can purchase a day's food for one-fourth of that sum; hence it follows that his disposable wages are 200 per cent. higher for ten hours labor, than a man could have earned in 1725 by working twelve hours. Compare the prices of things even forty years ago, with the prices now—salt, sugar, tea, butter, soap, flour, clothes;—examine, too, the increase in the average length of life (an important point,) and the improvement in the material condition is made evident; while, if you notice the establishment of elementary drawing schools, artisans' schools, schools of design, and free libraries, you will see a good prospect opening for intellectual advancement. At all events, and we offer the advice only to such as are disposed to take it from us, and will not think it impertinent, do not fail to give your children the advantage of the means of improvement and ultimate advancement which offer themselves; send your sons to the elementary drawing schools, and encourage in them a taste for reading.

Explosion of Lime Barrels.

George Dragan, for the last six years employed in the shops of the Mad River Railroad, was killed at Sandusky on Thursday morning last, by the explosion of a barrel, into which he had put unslacked lime for the purpose of cleansing it. On pouring boiling water upon the lime and shaking the barrel after closing the bung, it exploded with great force, and so badly shattered the German's head as to cause his death in a few moments. He leaves a wife and four small children.—Here then is another question for savans—"will lime explode.—[Ex.

[This is no question for savans at all; everybody knows that lime will explode by pouring boiling water upon it. The gas given out by lime when water is poured upon it, is active steam—one exceedingly sensible of heat, and which has a most extraordinary expansive power. A large cast-iron cylinder of great thickness, which was employed to contain carbonic acid gas in the Polytechnic Institute of Paris, exploded with terrific force, killing the assistant lecturer in an instant. If carbonic acid gas burst an iron cylinder as thick as a cannon, what is to hinder steam from bursting a barrel. A reader of the Scientific American would have known this, for the information has more than once been propagated through our columns.

Mechanics and the Scientific American.

The following is from our excellent cotemporary, the Marshall Telegraph, Marshall, Ill., J. G. Jones, editor. It contains plain and kindly spoken truths. No mechanic now can rise either to be a foreman or manager, or a good tradesman, or can be qualified to do business for himself intelligently, unless he takes a paper devoted to the progress of invention and the arts :—

"We acknowledge the receipt of the Scientific American from the commencement of the present volume, and most cordially recommend it to the patronage of the mechanics and others in this section.

Whilst on this subject we must confess that we have been pained to witness the indifference manifested by our young mechanics generally, and those who are learning mechanical occupations, in qualifying themselves to become complete masters of their business.—This is not right. When a young man starts out in life to learn a trade, he should do it with a determination to excel in his particular branch. This can only be effected by reading the observations of others, and profiting by their experience; and at the same time deep thought and close application on the part of the student. If a young man desires to become complete master of his business, he should not consent to be satisfied with the instructions of his employer only—imagining that all has been learned that can be; but he should read, study, reflect, investigate, and inquire into the whys and wherefores—become acquainted with first principles. Why have we so few superior workmen in the different branches of mechanics? Simply for the want of the right kind of application on the part of those who follow such pursuits. They have the ability, the intelligence, and the energy if they would but bring them into operation. Young men! instead of idling your time in reading foolish, simpering, mawkish love stories and novels, get good scientific works, connected with the branch of business you are learning, and store your minds with facts which will last you as long as you live, laying the foundation for future usefulness, and bring to you honor, fame, and competence. What made a Franklin, a Fulton, an Arkwright, and a Watt? Was it foolish, trifling reading? or was it a proper direction of their leisure hours to the right kind of study?—That which has been done by others can be accomplished by you; the positions they have filled in community can be attained by you, if you use the same industry and persevering application.

Throw away your love-sick novels and procure good scientific works. We know of none better to recommend than the Scientific American."

Shawl Fringes.

M. Blanquet, a French manufacturer has invented an ingenious apparatus for giving a double twist to the fringes of shawls, tartans, &c. This has been contrived in order to imitate in French shawls, the fringes of the common English shawls, which were eagerly purchased by French ladies at the World's Fair in London, on account of their superiority in this respect.

Coining Machine.

M. Bovy, of Geneva, has just introduced into France, with the authorization of the State, a new coining press; having an eccentric and direct action, and of simple and economical construction, which appears to unite all the advantages of regularity, precision and firmness that are required in a similar machine. It is now being tried in the government mint at Paris, and will be specially employed for striking a new copper coinage.

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TO CORRESPONDENTS.

F. R. B., of N. Y.—We have carefully examined the sketch and description of your alleged improvement in rotary engines; it possesses features entirely novel to us, having never seen anything nearer to it than Furman's, illustrated in our last volume. We do not perceive a single advantage to be gained by it over many others, and we incline to the opinion that it will prove on trial a total failure; successful experiments will only satisfy us to the contrary.

T. N. J., of N. H.—You would see in our last number something more upon anastatic printing. We are not at present in possession of any more information upon the subject; but we shall endeavor to present it when obtained.

N. O. L., of N. H.—Your proposition in regard to warming shops from the fire of a smith forge, requires to be more specifically explained before we can advise respecting it.

S. F., of Pa.—We do not remember ever to have seen a car brake constructed like yours, and think it patentable; you had better send us a model of it that we may more thoroughly understand its operation. You are too late to compete for Ray's premium.

S. B. M., of Pa.—There is nothing new in your Sausage Stuffer; we have seen the same machine before.

J. S. H., of Ill.—Minifie's Drawing Book is being issued in numbers; it is, we believe, the same as the original work. It requires a lens of sufficient power to take in the distance.

W. D. M., of N. J.—We do not know of a single good book on the subject you speak of.

A. M. G., of S. C.—The invention noticed in No. 6 of our paper is quite different from yours; Mr. Gardiner's is of older date. Perhaps you had better send us a small model of yours and we will advise you more definitely.

E. K. Purdy, Schoolcraft, Mich., wishes to know the price of a machine suitable for cutting walnut veneers.

W. D., of Vt.—By addressing Messrs. Fowlers & Wells, this city, they will furnish you with Phonographic works.

V. E. R., of Ill.—For the fine list of subscribers furnished by you, accept our thanks.

M. F., of Va.—Every concern like the Collin's Axe Co. have secrets of their own for tempering; in some of the back volumes of the Scientific American you will find reliable receipts and hints upon the subject of tempering edged tools.

G. G. H., of Pa.—Paddle wheels constructed upon the plan you described are old and well known.

H. J. T., of Boston—We believe a patent for your application could not be obtained.

C. H., of Ill.—Your engine will operate, and for a very high fall and a small quantity of water, it will do well, but you must expect no more from it than the gravity and velocity of the water—the height is an index of the velocity. A number of water engines have been employed; we published one in Vol. 3; it is not so simple as the case water wheel, which we prefer.

A. B. R., of Pa.—Your plan is new, but you cannot obtain any valuable results. You never can obtain a power to drive an engine by a force of its own creation. See the opinion of Prof. Henry, in Vol. 6, Sci. Am., expressed about the Paine Light, which was to do the same thing that you propose to accomplish.

F. S. B., of Albany—If your volumes were complete there would be no difficulty in disposing of them, but as they are not we could not probably sell them for you at high prices.

N. K. L, of N. Y.—The atmosphere is allowed to be about 52 miles in height, and the pressure is 15 lbs on the square inch.

H. P., of N. Y.—If you will send your model to our office we will examine it and report upon the merits of your plan. We are suspicious, however, that you have got nothing new.

G. M. P., of Mass.—Mr. Green refuses to supply copies of his late Book of Specimen Types to any but those who are purchasers of materials.

J. A. C., of N. Y.—There is nothing new in the Churn which you describe; air has been introduced into churns in the same manner.

S. G. B., of Wis.—The mere application of boiler-iron to the bottom of a dirt scraper, instead of wood, could not be patented; besides, scrapers have often been made in the same manner.

W. C., of Canada West—You will be able to obtain the Magic Lantern Reflector of Benj. Pike, Jr., of this city; we will hand your letter to him for attention.

O. B., of Ind.—We have seen washing machines essentially similar to yours; we therefore conclude that you cannot obtain a patent.

Money received on account of Patent Office business for the week ending Saturday, Dec. 4:—

L. & H, of N. Y.., $30, J. E., of N. Y., $30; S. H N., of Pa., $32; C. W. G., of N. Y., $40; C. W., of N. Y., $25; J. M. D., of N. Y., $55: L. S G., of Tenn., $15; J E. W., of Pa., $25; C. B. D. LaV., of N. Y., $100; G. B. R., of N. Y., $30; E. Van C., of Pa., $5; T. B., of N. Y., $10; R. & F., of N. Y., $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 4:

C. W., of N. Y.; T. B., of N. Y.; A. A. D., of Ga.; J. Y., of Ohio; G. P., of N. Y.; J. E. W., of Pa.; S. I., of N. Y.

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Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

WILL BE SOLD—On Thursday, Dec. 29, 1852, at Public Auction, if not previously disposed of at private sale, the SALUDA COTTON FACTORY, situated on Saluda River, three miles from Columbia, where the Greenville and Charlotte Railroads connect with the South Carolina Railroad. The building is of granite, built in the best manner, 200 feet long, five stories high, containing thirty-six 30 inch cards; 120 looms, 40 spinning frames, three mules, with speeders, warping machines, dressing frames, and reelers, with every thing necessary for running the mill. The machinery is in complete order. There are one hundred and sixty acres of land situated on both sides of Saluda River, furnishing water-power sufficient to drive 100,000 spindles. The cottages for operatives are in good order; and the situation a very healthy one. The establishment, independent of the negroes, cost the present Company upwards of $100,000. Persons desirous of treating privately for it, will apply to
R. W. GIBBES, President.
Columbia, S. C., Nov. 24. 13 3

NEWELL'S PATENT SAFETY LAMP AND LAMP FEEDER—Warranted to prevent all accidents from the use of Burning Fluid, Camphene, and other explosive compounds used for the production of light. This invention is applied to Solar and Camphene Lamps. For sale, wholesale and retail, by Newell & CO, Sole Manufacturers, No. 8 Winter st, Boston, and New York by G. W. McREADY, 426 Broadway.

CERTIFICATE—College of Physicians and Surgeons, New York, Oct. 17, 1852. We have examined the Patent Safety Lamp and Lamp Feeder, of Mr. John Newell, of Boston, and are fully convinced, from the experiments we have made with them, that he has obtained the great desideratum of preventing the risk of explosive action in the use of burning fluids in Lamps and Feeders. In this respect we entirely concur in the opinion of Prof. Silliman, and Drs. Hayes and Jackson.
JOHN TORREY, Prof. of Chemistry,
WM. H. ELLET, Prof. of Chemistry.

WEIK & WIECK, Publishers, 195 Chestnut st., Philadelphia, have issued F. Ahn's new, practical, and easy Method of Learning the German Language, with a pronunciation arranged according to J. C. Oehlschlager's recently published Pronouncing German Dictionary. First and Second Course, bound; price 37 1-2 cents. Also a Pronouncing German Dictionary: German and English and English and German Pocket Dictionary, with a pronunciation of the German part in English characters and English sounds; 850 pages, 18mo; bound, embossed backs; price $1. The trade furnished at a discount. 13 4

WOODBURY'S PATENT PLANING Machines—I have recently improved the manufacture of my Patent Planing Machines, making them strong and easy to operate, and am now ready to sell my 24 inch Surfacing Machines for $700, and 14 inch Surfacing Machines for $650 each. I will warrant, by a special contract, that ONE of my aforesaid machines will plane as many boards or plank as two of the Woodworth machines in the same time, and do it better and with less power. I also manufacture a superior Tonguing and Grooving Machine for $350, which can be either attached to the Planing Machine, or worked separately. JOSEPH P. WOODBURY, Patentee, Border st, East Boston, Mass. 13t

E. HARRISON'S UNEQUALLED FLOUR AND GRAIN MILLS—Their frames and hopper are cast-iron, and the stones French Burr, 30 inches to four feet diameter. Thirty inch mill grinds 20 bushes an hour, weighs 1400 lbs.; cash price $200. These mills, constructed upon a new principle, have become widely known, and are producing a revolution in milling. Cash orders promptly supplied, and the mills warranted to work in the best manner. The patentee offers $500 reward for any mill which will do an equal amount of work with the same power and dressing. Made and for sale at the corner of Court and Union streets, New Haven, Conn., by
13 4* EDWARD HARRISON.

WANTED—One or two active business mechanics, with $1500 or $2000 capital, to invest in a planing, sash, and other machines, to connect with an establishment, consisting of large and commodious buildings, a good and almost new engine and other machinery, already put up in a pleasant, healthy, and flourishing town in the South. References required and given Inquire at 45 South street between 9 and 10 A. M, or by letter addressed "DESAIX," care of Munn & Co. 13 2*

FOUNDRY FOR SALE—The Columbus Foundry, in Columbus, Miss., is offered for sale on the most liberal terms. The Foundry has a 15 horse-power engine and boiler; also a good grist mill, and attached to it the moulding room, 45 by 50 feet; all the tools and patterns will be sold with it. A good stand to do a good business; no foundry near. For further particulars and terms, &c., address A R. WOLFINGTON, Columbus, Miss. 13 3*

R. W. PARKER'S PORTABLE SAWING Machines, driven by his patent method of banding pulleys, as manufactured by C. W. & R. Bemis, of Waltham, Mass., for sale all complete, or with the iron work separately, by HORACE F. FARRINGTON, Nos. 46 and 48 Wooster st., N. Y. 13 4*

CHURCH CLOCKS—On a new and improved principle, warranted perfect time-keepers, and easily kept in repair. Prices from one to three hundred dollars. Old clocks regulated on a new principle, and warranted to keep perfect time. Address.
CHAS FRED. JOHNSON,
13 4* Owego, Tioga Co., N. Y.

BLISS' IMPROVED MORTISING MACHINE Illustrated on page 220, Vol. 3, Sci. Am. These machines are made by J. W. BLISS, Hartford, Ct., and on the receipt of $25 will be boxed in good order and sent by Express to any part of the country. 12 4*

THE SATURDAY EVENING POST—The Leading Literary Weekly.—Over thirty-one years have elapsed since the Saturday Evening Post was commenced; its circulation being now greater than at any former period. The publishers design giving, during the coming year, with other original matter, the following novelets: "Clara Moreland," by Emerson Bennett; "Miss Thusa's Spinning Wheel," by Mrs. Lee Hentz; "A Stray Patch from Aunt Hannah's Quilt," by Mrs. Frances D. Gage, of Ohio; "The Lost Heiress, a Story of Howlet Hall," by Mrs E. D. E. N. Southworth, author of "The Deserted Wife," etc., together with Agricultural Articles, General News, Engravings, Miscellaneous matter, Humorous Sketches, Foreign Letters, &c. Terms (cash in advance): Single copy, per annum, $2; 4 copies, $5; 9 copies, $10; 14 copies, $15; 21 copies, $20. Address DEACON & PETERSON,
No. 66 South 3d st., Philadelphia.
Sample numbers sent when requested. 12 3

50-HORSE STEAM-ENGINE FOR SALE.—A new and superior Engine and Boilers, with all connections, &c., complete, and ready to be put in operation without further additions. The above, with plain exterior finish, is made of the best of materials and with the utmost attention to perfection of construction, arrangement and workmanship. For further particulars, apply to J. CUMMINGS, Columbia Foundry, Duane-street, New York. 1*

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, &c, Time-Pieces for Vestry and Session Rooms' Railroad Stations, Banks, Offices, etc., of various styles and prices; Regulators for Jewellers, with different-sized movements, plain and jewelled (in plain cases or others of an entirely new pattern and unequalled elegance), all of which possess the important improvements introduced by the undersigned, and which warrant an accuracy of time-keeping, unequalled in Europe or this country. Glass and other dials for illuminating, showing the time distinctly night and day. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius."—[Jour. of Commerce. 13 26eow

STEAM ENGINES FOR SALE—We offer for sale two Engines and Boilers, as follows: one 8 horse, horizontal, cylinder 7 inches bore, 16 inch stroke, on a cast-iron bed, fly wheel, driving pulley, governor, pump, pipes, etc.; has never been used. The Boiler has been used by the maker about one year. It is cylinder, horizontal, 16 feet long, 30 inch diameter, has a steam chamber, try-cocks, check and safety valves: price, $600.

One 7 horse Horizontal Engine, 6 inch bore, 16 inch stroke, cast-iron bed-plate, driving pulley, etc. Boiler horizontal, tubular, and has everything complete for putting it in operation. The engine is new, the boiler has been used, but is in good order. Price $500. They are rare bargains, and will give satisfaction to the purchaser, being much less than new ones can be obtained. Address MUNN & CO.

COTTON MACHINERY FOR SALE—Four Filling Frames, of 144 spindles each, made in the best manner and nearly new; price $1 per spindle; other machinery for sale equally low. Apply to E. WHITNEY, New Haven, Conn. 11 6*

IRON FOUNDERS MATERIALS—viz.: American hard white and grey Pig Iron; No. 1 Scotch Pig Iron; Iron and Brass Moulding Sand; Fire Sand and Fire Clay; Core Sand and Flour. English and Scotch patent Fire Bricks—plain, arch, and circulars for cupolas. Pulverized Soapstone and Black Lead, Sea Coal, Anthracite and Charcoal Foundry Facings of approved quality, always on hand and for sale by G. O ROBERTSON, office 135 Water street, (corner of Pine), N. Y. 11 6*

PATENT EXCELSIOR STRAW, HAY, AND CORNSTALK CUTTER—Premiums awarded at the following Fairs:—Pennsylvania Agriculturai Society, Lancaster, Pa.; New York State Agricultural Society, Utica, N. Y.: Rhode Island Ag. So., Providence, R. I.; Georgia Ag. So., Macon, Ga; South Carolina Ag. So., Charleston, S. C.; Franklin Institute, Philadelphia, Pa.; Provincial Agricultural Association, of Toronto, Canada West. Having increased our facilities for manufacturing, we shall hereafter be able to execute all orders promptly.
E. T. TAYLOR THOMAS & CO.,
10 4* 125 Pearl st, N. Y.

WOODWORTH PLANING MACHINES, on hand and manufactured to order, of superior quality, at reduced prices, warranted perfect. Also steam engines and other machinery, by JOHN H. LESTER, 57 Pearl street, Brooklyn, L. I. 12 4*

UNITED STATES STANDARD RULES—Manufactured by JOS. R. BROWN, Providence, R. I. Agents: A. J. Wilkinson, No. 2 Washington st., Boston; J. N. D. Wyckhoff, 152 Broadway, and Sibenmann & Quartier, 15 John st., N. Y.; Homer Foot & Co., Springfield, Mass.; John S. Gray, Hartford, and J. G. & F. H. Brown, New Haven, Conn.; W. F. Dominick & Co, Chicago. 12 4*

EXHIBITION OF WORKS OF AMERICAN Industry at Washington City.—The first exhibition of the Metropolitan Mechanics' Institute will be opened on Thursday, the 24th of February, 1853, in the new and splendid hall of the east wing of the Patent Office, one of the largest and most magnificent rooms in the United States, being 275 feet long by 70 feet wide. To this exhibition the manufacturers, mechanics, artists, and inventors, from all portions of the Union, are cordially invited to contribute. The hall will be opened for the reception of goods on Monday, tha 14th of February, and the exhibition will positively close on or before Thursday night, March 17. Circulars, containing detailed instructions, will be forwarded and any further information given, on application (post-paid) to the Corresponding Secretary, Charles F. Stansbury, to whom all communications on the business of the Institute should be addressed 8tf

THE TROY IRON BRIDGE CO. are prepared to erect Iron Bridges or Roofs, or any kind of bearing trusses, girders, or beams, to span one thousand feet or under, of any required strength, in any part of the country. Their bridges will be subjected to severe tests, and can be built for about the price of good wooden ones. Address BLANCHARD & FELLOWS, Troy, N. Y. 7 20*

1852 TO 1856.----WOODWORTH'S PAtent Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 1amtf

BAILEY'S SELF-CENTERING LATHE—The best in America for Chair Stuff, Wagon Thills, Rake, Fork, Hoe, and Broom Handles. Persons wishing this Lathe, warranted to do twice the work of any other lathe, by applying to L. A. SPALDING, Lockport, N. Y., can be supplied. The following certificate of Birge & Brother, extensive chair manufacturers, at Troy, N. Y., is to the point:—

"After making a perfect and thorough trial of Bailey's Self-Centering and Self-Adjusting Lathe, we can cheerfully recommend it as in every way calculated to perform its work in the best manner—as it is the best Lathe we have ever used in our manufactory; and having used many different kinds, we feel safe in asserting that it is probably the best machine of the kind in use. BIRGE & BROTHER, Francis Miller, Lucius Foot, Turners for B. & B."
3 3m

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 1tf

MACHINISTS' & MANUFACTURERS' Tools. O. SNOW & CO., Union Works, Meriden, Ct. Having increased their facilities for manufacturing Lathes, Planers, &c., have now on hand, finished and finishing off, Slide Lathes, a variety of sizes and lengths, at prices varying from $125 to $800, according to size and finish; also Hand and Power Planers for iron, 2, 3 1-2, 6, and 10 feet beds; also Milling Machines, Hand Lathes with or without iron beds, comprising six different sizes, all of the most approved construction and warranted of the best quality of work. 9 7*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
7tf P. A. LEONARD.

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 lbs., price $660. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 39 26*

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
1tf Painters and Chemists.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

DRAWING BOARDS—Patent; 23 by 29 inches, with extensive Scales and Sheet Fastener. Descriptive Circulars sent on application; $10 for Board and T Rule. Sent by Express. Address, post-paid, CHAMBERLIN & CO., Pittsfield, Mass. 50tf

FALES & GRAY (Successors to TRACY & FALES), RAILROAD CAR MANUFACTURERS—Grove Works, Hartford, Connecticut. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly.
1tf

SHINGLES, SHINGLES, SHINGLES—WOOD'S latest improvement in Shingle Machines is becoming more generally used than any other ever invented, and is unquestionably the best machine now in use; it produces shingles from all kinds of timber in a very perfect and rapid manner. Machines and rights for sale. Apply to JAMES D. JOHNSON, Bridgeport, Ct. 9tf

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines.

For machines or territorial rights, apply to C B. HUTCHINSON & CO., Syracuse, N. Y. 9tf

POSTAGE STAMPS.—Post Office Stamps, of the denomination of 1, 3, or 12 cents, may be had at par by addressing MUNN & CO., Scientific American Office.

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

NEW HAVEN MANUFACTURING COMpany, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines: All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H. Man'g Co. 45tf

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SCIENTIFIC MUSEUM.

Combustion of Coal.

The power of a steam engine does not lie in its cylinders, beam, shaft, and levers; no, these only apply the power usefully. The force that moves the engine is steam, and that which produces steam is a chemical action—the combustion of fuel. Combustion appears to be a very simple operation, but we do not know a chemical phenomenon more difficult of a clear explanation. It consists of decomposition and recomposition. In the first place coal is solid carbon, a heavy substance, but if this be united chemically with oxygen, in parts (CO^2) it becomes carbonic acid gas.—This gas can only be formed of carbon and oxygen, by the chemical action which we call combustion, as exhibited in a fire (we do not speak of fermentation—slow combustion). The question may well be asked, what is the cause of combustion? It is an important one, and like a great many others, it is easier asked than answered. We only know that when a certain amount of heat is generated in fuel, by the particles of it changing their condition and arrangement, the oxygen of the atmosphere separates from the nitrogen with which it is chemically united, and combines with these carbon particles forming carbonic acid gas. This action is called combustion—fire—great heat is developed, the coal is said to be decomposed by it, and the union of the carbon particles with the oxygen—a new composition forming a gas, which, strange to tell, extinguishes flame and fire, although it is itself the direct product of fire. The heat generated by combustion imparts a like action to water, through bars of brass and plates of iron, and changes its condition from water to steam, which occupies 1,700 times the space of water. It is this expansive force—the combination of water and heat, which is the vital power of the steam engine. There is just as much philosophy to be learned in investigating the causes of making a tea kettle boil, as those of volcanic eruption, and the information to be derived is more practical and useful.

As carbonic acid gas is formed of (CO^2) it requires two pounds of oxygen to saturate every pound of coal to form this gas. If, when burning coal, it is not completely saturated with oxygen, a gas called carbonic oxide (CO) is formed with one pound of oxygen to one of carbon, which is not so expansive, consequently a great loss of heat is experienced.—We then see the necessity of supplying fuel in a state of combustion, especially when fresh coal is put on the fire with a plentiful supply of oxygen.

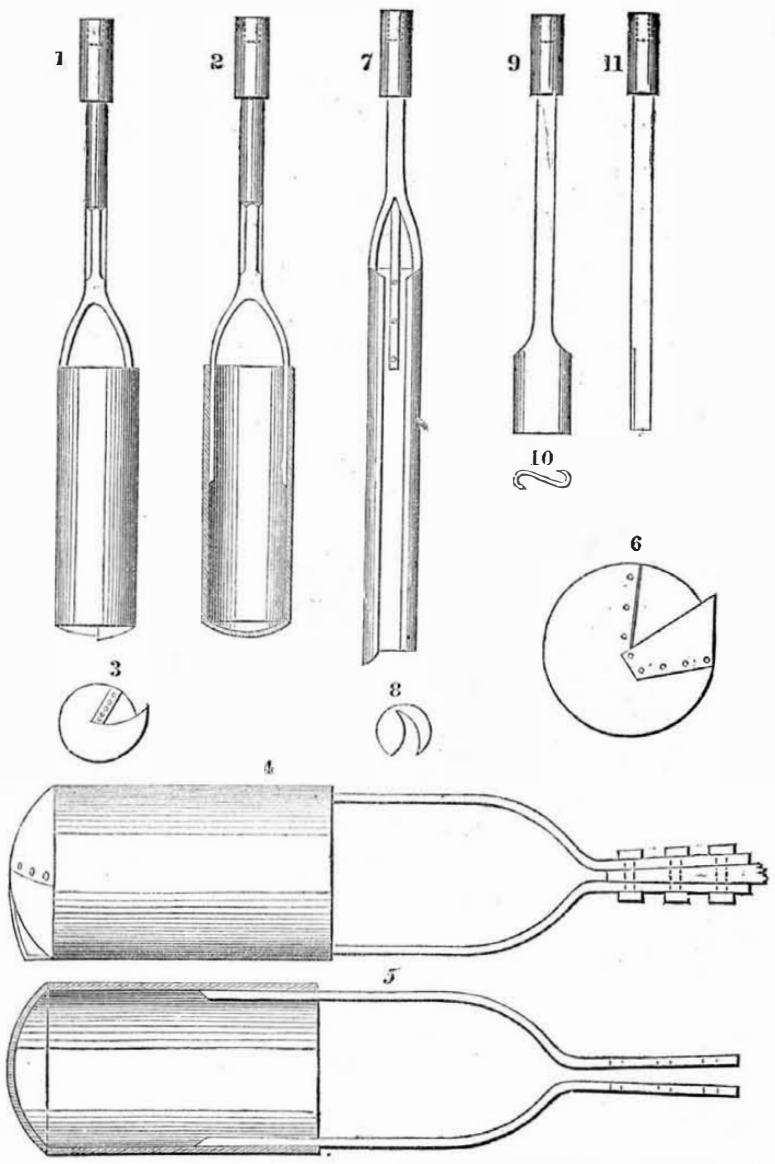
As the atmosphere is composed of 21 volumes of oxygen to 79 of nitrogen, it follows that a great quantity of air must pass through a fire to supply a few pounds of coal with sufficient oxygen to form perfect combustion.—For every two pounds of oxygen extracted from the atmosphere, exactly 7 pounds of nitrogen must also pass through a fire (nitrogen is the heaviest gas,) consequently nine pounds of air must pass through a fire for the perfect combustion of every pound of pure carbon—coal. Now, as 100 cubic inches of the air weigh 31·0117 grains, and as 5,760 grains is one pound, and 1,728 cubic inches form 1 cubic foot, it follows, $5760 \times 100 \div 31{\cdot}0117 =$ (leaving out the decimals) that we have 18,583 cubic inches, or more than 10 cubic feet of air to weigh 1 lb., which makes more than 90 cubic feet of air which pass through a fire for the perfect combustion of one pound of coal. In furnaces, it is calculated that nearly 200 cubic feet of air pass through the fuel for the combustion of one pound of coal.

We see by this what an amount of air is necessary to be admitted into rooms during the winter season for the complete combustion of the fuel in stoves and grates. This must be supplied through crannies, cracks, or open seams, for it is chemically impossible that the fire will burn unless supplied with its due proportion of oxygen. This is the reason why, in a close warm room, if we lay our hand upon any seam near a window, we feel a rapid current coming in. This fact teaches us how necessary it is to have rooms well ventilated, and why large rooms are more healthy than small ones. How wonderful an atmosphere is that of ours, which acts as the generator, regenerator, and conductor of both heat and cold; its own purifyer and renovator.

Well Sinking----Artesian Wells.

(Continued from page 96)

Tools.—In the annexed cut, figures 1, 2, and 3 show an elevation, plan and section of an auger. The tapped socket is for the purpose of allowing the rods to be screwed into it. The leading nose, *a*, is for cutting, and the valve, *b*, is to prevent the material that is cut from falling out of the auger while it is being raised to the mouth of the bore. Figures 4, 5, and 6 represent a similar auger of larger size; it has not a screw tapped into a socket as the former one, but is bolted, instead, to an intermediate rod. Figs. 7 and 8 are two views of a small auger with a longitudinal slit and no valve; it is used chiefly for boring through clay and loam. In very stiff clay the slit may be a very wide one, in sort clay narrower; while in very moist ground, it is inadmissible altogether. Figs. 9, 10, and 11 show an S chisel for cutting through rocks, flints, &c.; this tool is worked with a vertical and circular motion.



Thomas Prosser, C. E., of No. 28 Platt street, this city, who furnishes tubes answer, able for Artesian borings, has issued a small pamphlet on this subject. It is merely, as it states, a few loose remarks thrown together with reference to works where other information may be found. It quotes an extract from the "London Mechanics' Magazine," which recommends Dr. Pott's method of sinking iron tubes for wells of large diameter, when the substances to be bored consist of loose sand or the like. This process of sinking tubes is by atmospheric pressure, extracting all the air from the interior of the tube by an air-pump, when it descends with great rapidity. It is secured by a patent in the United States, of which C. Pontez, C. E., is the assignee. The process is illustrated on the first page of this volume of the Scientific American. The boring tool must always excavate or bore an opening somewhat wider than the tube, in order that it may descend into its proper place as the sinking proceeds. If the boring for water was through a rolid rock, no cylinders would perhaps require to be sunk—none if there were no veins of water met with above the main supply. When the lower water supply is depended upon entirely, no intermediate seam of water should be allowed to have any communion with that which rises from the lowest depth; it is therefore necessary that the sunken pipes should be well fitted, to prevent any communication between the lower water stratum, and any one that may be above it. The surface water must also be perfectly stopped out, and Pott's iron cylinders appear to us to be a good plan for this. The common way is to stone or brick up the first 30 or 50 feet of excavation, puddling between the outer courses of brick with good clay, and making good joints with hydraulic cement.

(To be continued.)

Accoustic Telegraph.

Won't the Scientific American give us its opinion of the practicability of a speaking telegraph? How far can a good pair of lungs make themselves heard through a tube of half inch diameter (or an inch if it would be better?) The advantages of such a telegraph are too numerous to mention—what are the difficulties?—[Savannah Journal.

We know of no difficulties in the way of the speaking telegraph, except the expense of the lines; they cannot be erected so cheaply as telegraph wires, nor can they be operated so rapidly. The extreme distance through which two individuals can communicate through a tube, we do not know, nor do we believe experiments have ever been made on a scale sufficient to test the question. For short distances through public buildings they operate well, and are in general use, but for public use they are far inferior to the electric telegraph. Gutta percha tubes would be the best and cheapest to use for long distances. We are of opinion, however, that the accoustic telegraph is not so much employed as it might be, especially on shipboard, in prisons, hospitals, asylums, &c.

Mechanical Lecture.

C. H. Haswell, Senior Engineer, U. S. Navy, delivered a lecture before the Engineers' Institute, of this city, on the evening of the 25th ult. The subject was the impact of falling bodies, and to present a rule for calculating the effect of the falling weight in a pile driver. He illustrated his remarks with experiments. The subject is an intricate one. The force of a falling body is its momentum, composed of the weight multiplied into the velocity. After the lecture, Mr. Lindsay, the Secretary, made some appropriate remarks;—this institution, we believe, is in a flourishing state.

Folliculitis, Commonly Called "Clergyman's Sore Throat."

An article under this caption appeared on page 64 of this volume of our paper. in which the name of Dr. Warren, of Boston, Mass., is mentioned as being the discoverer. As there are a number of Dr. Warrens in Boston, and to avoid confusion, we are requested to state that it is Dr. Ira Warren, No. 1 Winter Place to whom belongs the merit of the discovery.

LITERARY NOTICES.

Napoleon Dynasty—Published by Cornish, Lamport & Co.: New York.—At the present moment, when the Napoleon name is again acquiring, or rather, has re-acquired a fresh ascendancy in the politics of Europe, any new information with respect to Napoleon Bonaparte or his family, is a subject of particular interest. The above-named work is an original publication, lately issued from the press, and appears very *apropos* to satisfy public curiosity. One of its peculiar features is the space devoted to the biographies of the members of the Napoleon family, some of whose descendants appear destined to play a conspicuous part in the future history of the world. During the life time of the great Napoleon, his kindred were obscured by the dazzling glory of his fame, so that comparatively little attention was directed towards them, every writer of the times confining his remarks to the absorbing theme—Napoleon the General, Consul, and Emperor. This work does infinite credit to our country; it is written by the "Berkley Men," and published as mentioned above. It contains over 600 pages, illustrated with portraits; size demi-8vo., cloth; price two dollars and a-half.

Littell's Living Age—No. 449 of this, the best of all weekly magazine re-publications, contains an article on the Life and Writings of Justice Story, from the Edinburgh Review, which is flattering to the memory of our great countryman. Every American should read it. It says, "he was the author of more text books of a higher order, and on almost every branch of Jurisprudence, than any writer of his age."

Practical Mathematics—With Drawing and Mensuration, applied to the Mechanic Arts, by Prof. Davies, the author of so many useful mathematical works: published by A. S. Barnes & Co., No. 51 John street, this city. This is a very useful and excellent book, embracing a collection of much that is instructive; the section on Topographical Drawing is worth the whole price of the book.

Teeth of Gear Wheels—A practical treatise on the teeth of gear wheels, by Prof. Willis, F.R.S., is an excellent Tract; published by Joseph P. Pirrson, No. 5 Wall street, this city.

The Whig Review—For December, contains a splendid picture of Daniel Webster, accompanied by an able article from the pen of Prof. Felton, besides other political and literary articles. Terms of the Review $3 per annum; Champion Bissell, publisher, New York.

MECHANICS

Manufacturers and Inventors.

A new Volume of the SCIENTIFIC AMERICAN commences about the middle of September in each year. It is a journal of Scientific, Mechanical, and other improvements; the advocate of industry in all its various branches. It is published weekly in a form suitable for binding, and constitutes, at the end of each year, a splendid volume of over 400 pages, with a copious index, and from five to six hundred original engravings, together with a great amount of practical information concerning the progress of invention and discovery throughout the world.

The Scientific American is the most widely circulated and popular journal of the kind now published. Its Editors, Contributors, and Correspondents are among the ablest practical scientific men in the world.

The Patent Claims are published weekly and are invaluable to Inventors and Patentees.

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